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AS A MEANS OF

INCREASING RECREATION ON PUBLIC LANDS

Albert M. Day
Natural Resource Specialist

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UNITED STATES
DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Washington, D. C. 20240

March 4, 1966

Mr. Charles A. Stoddard
Director, Bureau of Land Management
Washington, D. C.

Dear Director Stoddard:

I have just completed the rather extensive survey to which you assigned me in October 1965, dealing with means and methods of making the vast public land holdings under jurisdiction of the Bureau of Land Management more useful for fish, wildlife and recreation under the mandates of the new Classification and Multiple Use Act. I traveled throughout the states of Montana, California, Nevada and Oregon and looked into specific problems in each state which had been listed by Bob Smith, Chief of your Wildlife Staff.

I found all of your people most friendly and cooperative. Your State Directors made men, automobiles and airplanes readily available and afforded the opportunity to cover a great deal of country in a short time. Personnel of the Bureau of Sports Fisheries and Wildlife, the Soil Conservation Service, the Forest Service and the State fish and game departments were most cooperative.

One of the satisfying reactions was the uniformly enthusiastic appreciation of the Bureau's new course of approach to recreation in general since the passage of the Multiple Use Act. While it will take some time to fully integrate the recreation concept into the older programs, you and your staff are making commendable progress.

There are a few points of particular interest that I want to emphasize. They form a uniform pattern in each state that I visited and probably apply everywhere. Others are discussed in more detail in the report. But, first, I want to submit a general observation as to BLM's.

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PUBLIC IMAGE

According to BLM's Public Land Statistics for 1964, this agency owns 485,246,880 acres of public domain; the Forest Service 159,988,440; the Fish and Wildlife Service 24,345,950; and the Park Service 17,996,113. BLM lands produce more game, sport and commercial fish, camp grounds for rock hounds and a host of other recreation seekers, than any other Federal land administering agency.

Yet, in the public image, recreation is hardly recognized. The Park Service represents Kodachromes, rushing streams, geysers and bears; the Fish and Wildlife Service, ducks and geese; the Forest Service, leaping trout, tall trees, Smoky the Bear, and Lassie, the assistant Ranger; the Bureau of Land Management represents cows and sheep, too often on overgrazed public lands.

None of these concepts are accurate, but they express how most recreation minded people appraise the functions of the public land administering agencies. The lack of understanding of BLM's contributions to recreation should be corrected by a planned and coordinated attempt at all levels of your agency. You can be proud of your present accomplishments in this field, but they are not generally known.

The public should be made to understand that cows and sheep do not own the vast public domain; that also ducks and geese, trout and salmon, antelope and elk, deer and mountain sheep, rockhounds and amateur gold miners, campers and sunbathers have used these vast areas freely for many years and that the new Act now merely gives you an opportunity to improve your administration and do more for this class of user. Livestock and wildlife need not be serious competitors. There is room for both.

To improve this understanding there are some urgent needs. These are:

ADDITIONAL TRAINED PERSONNEL

This is your prime need. Recreation is legally a new responsibility and it will take more people trained in fish, wildlife and recreation management to bring this aspect of your broad program to an equal footing with cows, sheep, saw logs and minerals. I found a crying need for staff in this field everywhere I went. One of your field men in California told me: "With our limited staff, we are barely able to drive stakes ahead of the bulldozer. If the Director told me I could have millions of dollars tomorrow to improve recreation, I couldn't do a thing with it unless he gave me authority to put knowledgeable people to work spending it. We need help, not just more jobs to do."

BUILD YOUR OWN STAFF

BLM can never do the job expected of it by the public under the new law by depending on borrowed help from the Bureau of Sports Fisheries and Wildlife, the Park Service and the State Fish and Game Departments for its technical guidance in this field. You need your own men, placed on a status equal to the Foresters, Range Managers, Engineers and other specialists. Then, recreation can be built into your projects as they are developed at the field level. A review of the history of the attempt some 30 years ago to have wildlife responsibility for all public lands placed in the Fish and Wildlife Service was a disappointment. My advice is: Don't repeat it.

ACCESS

Public lands by law are open to the public for hunting, fishing and general recreation, yet are consistently blocked in many areas by "No Trespass" signs on private property that must be crossed to reach them. The whole matter is complicated and difficult, but it must be improved. This alone could go a long way toward reaching the Bureau's goal of increasing hunting opportunities by 3% and fishing by 3½% annually on BLM public lands.

LAND EXCHANGE AND PURCHASE

As BLM moves ahead with its classification and recreation program, the need for greater flexibility of action will become more evident. Under present restrictions, two years seems to be about the minimum period of time for a simple land exchange because of the strict requirement of "equal value." I recommend that legislation be sought to authorized greater leeway in this area. With its new responsibility in the classification and recreation field, the Bureau should have authority to acquire as well as dispose of public lands. This, alone, would expedite the land exchange process.

THE JOB CORPS

In Oregon's coastal area, where O and C lands are interspersed with other holdings, BLM could well undertake extensive stream rehabilitation by expanding its use of the Job Corps and similar programs. This would be a most useful and popular activity with both sport and commercial fishermen along the entire Pacific Coast. The same approach would apply in many other areas.

ADMINISTRATION OF RECREATION AREAS

It appears that the Bureau has traditionally avoided the expenditure of funds for public recreation. I suspect that this situation has a good background in Department, Budget Bureau and Congressional attitudes. With the new authority under the Act, the Bureau may now move into this field. More recreation, camping and fishing facilities such as I saw in Montana, Nevada and California will be welcomed by our growing out-door-minded public. Areas devoted to recreation, managed and publicized as being BLM facilities will go far to improve the public's education. Typical spots are discussed in my report in connection with the Montgomery Pass development in Nevada and the Cosumnes project in California.

I have listed specific recommendations in each section, but the above items are of broad application to your expanding efforts in this field. Of greatest importance is the realization that the Act gave you a new responsibility which must be integrated with your older established programs. That will take time, but the attitude of the people with whom I worked was most encouraging.

Sincerely yours

/s/ Albert M. Day

Natural Resources Specialist

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INCREASING RECREATION ON PUBLIC LANDS

Albert M. Day
Natural Resource Specialist

INTRODUCTION

The Classification and Multiple Use Act of 1964 (78 Stat. 986) broadens the concept of use of public lands administered by the Secretary of the Interior through the Bureau of Land Management. While emphasis is still retained on "disposal," there is clearly recognized the policy of retention in Federal ownership and management lands for broad public uses, including domestic livestock, grazing, fish and wildlife development, outdoor recreation, watershed and wilderness protection and "preservation of public values that would be lost if the land passed from Federal ownership."

This is a great step forward in the national recreation picture. Since 1781, the Federal Government's chief interest in public land has been to "get rid of it." More than one billion acres have been disposed of by grantes to the States for numerous purposes, disposal under the homestead laws, given to railroad corporations to encourage the construction of railroads, granted to veterans as military bonuses, sold for timber and mining claims and for almost any conceivable excuse. The result has been that the 465 million acres of public lands now administered by the Bureau of Land Management in the western States and Alaska are largely "tag ends" - lands which no private, State or municipal agency has wished to take off the hand of the Government.

The monumental study by the Outdoor Recreation Resource Review Commission in 1962 focussed the attention of the Congress and the public on the need to take constructive action pointed toward providing more adequate facilities for the ever-growing demands of America for healthy outdoor recreation.

Congress has responded to public demands as typified by this report in a remarkable fashion. The 88th Congress, which ended on October 22, 1965, chalked up the finest record of conservation achievements in all American history. One of the products of this awakening of public demand was the enactment of the Classification and Multiple Use Act of 1964. It has the solid support of private groups and public agencies seeking ways to increase opportunities for the recreational public to find the outlets they desire. Many segments of the American public are interested in seeing that the vast public lands administered by the Bureau of Land Management be retained in Federal ownership and developed for broad public use.

In response to these relatively new concepts, the Bureau of Land Management has increased its efforts to better manage fish, wildlife and recreation opportunities on the vast acreage under its jurisdiction. Plans are now under way not only to provide more forage for wildlife, especially during critical winter months, but also to make hunting lands more available to the sportsmen public.

Posting programs are now under way and new access roads are on the planning boards. Special maps have been prepared in most States to help sportsmen find Public Domain lands and distinguish them from private holdings. Meanwhile, the Bureau of Land Management is conducting research in cooperation with other agencies and individuals to develop better guidelines for habitat management. The Public Domain provides habitat for a large share of the game animals, birds and fish taken each year in the western States and Alaska. Management can be improved, and must be if the anticipated increase in demand for outdoor recreation is to be satisfied.

This report is the result of an assignment by the Bureau of Land Management to survey the recreational potential of existing BLM projects, with emphasis on sport fishing and hunting and to recommend for meeting fishing and hunting needs through future development projects. It is slanted toward water projects, although other problems have also been reviewed.

In a letter of instructions from Robert J. Smith, Chief of the Wildlife Staff, dated October 12, 1965, he explains that the survey is especially important for preparation of the 1968 budget. This will involve (1) the establishment of goals and objectives, and (2) listing and analyzing all possible alternatives that can be used to meet these goals.

The Bureau has determined the goal of increasing sport hunting potential by 3% and sport fishing by 3.5% annually. These projections are based upon present hunting and fishing demands as measured in the 1960 National Survey of Hunting and Fishing, issued by the U.S. Bureau of Sport Fisheries and Wildlife.

Smith estimates "that BLM lands in 1965 contributed to or provided 9.2 million days of sport hunting and 5.5 million days of sport fishing.*** Since sport fishing provides approximately four times as much recreation as sport hunting in the West, it is obvious that the public lands do not make a recreation contribution in this ratio even though the potential may exist if developed."

Montana was chosen as a good State in which to initiate the study. It produces a significant amount of mixed fish and wildlife species; is a leading livestock State; and will grow in importance in the field of public recreation. This was followed by studies in Oregon with particular reference to improving sport fishing on the O&C holdings and to examining Warner Valley problems; in Nevada on the Midas planning unit near Elko and the Montgomery Pass developments; in California on improvements for game on the Mojave Desert, the Tule elk controversy in Owens Valley and the Cosumnes development in the Sacramento Valley.

It is hoped that these specific studies may point the way to types of programs that may be adopted to enhance fish and wildlife benefits on BLM lands elsewhere.

ACKNOWLEDGMENTS

Writing this report was a pleasant assignment. It gave me an opportunity to renew many old acquaintances and to meet new workers in the fish, wildlife and recreation field, as area that is becoming increasingly important in public land administration.

During my investigation the State BLM Directors were most cordial and helpful. These were Harold Tysk in Montana, J. Russell Penny in Nevada, and Russell E. Getty in Oregon. Mr. Neal D. Nelson of California had just left for an assignment with the Public Land Law Review Commission in Washington but I have since visited with him there. In Oregon, Mr. Ernie Palmer, Chief of the Division of Resource Standards and Technology of the Portland Service Center was most helpful.

The District Supervisors made men, automobiles and airplanes readily available. In Montana I met Nyles Humphrey of Malta and Lee Laitala of Miles City. In California, Hall McCain of Riverside. In Nevada, Clair Whitlock of Elko who arranged and accompanied me on a delightful four hour flight over the Midas Planning Unit and the Ruby Lake Federal Wildlife Refuge.

The Wildlife Staff and District representatives in the States were my principal guides and sources of data. These were A. K. Majors and Buck Compton in Montana. Ed Smith, Tom Hall, and Jim Garner in California, Jim Yoakum, O. B. Howell, Martin Buzan and Don Cain in Nevada and Frank Stanton in Oregon.

State Fish and Game people were most helpful when needed. In Montana Dick Trueblood was especially cooperative, as was also Gerry Longballa. Ben Glading in California and Chuck Campbell in Oregon the same. Bob Schoning, Ed Neubauer and others of the Oregon Fish Commission were most helpful. In Portland R. H. Brownscombe and Bob Corthell of the Soil Conservation Service opened their voluminous data on PL 566 projects to us.

My former associates in the Fish and Wildlife Service spared no effort to make the study useful. All are enthusastic about the change in policy and approach of BLM blessed by the new Congressional authority. In Montana Fred Staunton of the Chas. M. Russell Wildlife refuge arranged for one of my former Alaskan pilots Bob Burkhalter to fly me in a Piper Cub over the west end of the vast Ft. Peck area. Manager Russell Hoffman at Lake Bowdoin near Malta and Owen Vivian at Medecine Lake near Plenty Wood were most helpful. In Portland, Regional Director Paul Quick, Assistant Director John Findlay, Ted Perry, Sam Hutchenson, and numerous others attended conferences and offered assistance. In Washington, D. C., J. Clark Salyer, Bill White, Al Studholm, Henry Hansen, Don Smith, Chuck Lawrence and others have reviewed portions of the report and given helpful suggestions.

Continuing advice has come from Bob Smith, Gene Zummwalt, Gene Peterson and others in BLM in Washington.

Many others I fear have not been mentioned but that oversight does not indicate my lack of our sincere appreciation to all who had a hand in this study.

MONTANA

Montana is the fourth largest State in the Union, exceeded in area only by Alaska, Texas and California. It sits astride the backbone of the North American Continent, with its snow-capped and glacier-studded mountains feeding waters into the Pacific through the Snake and Columbia Rivers and into the Gulf of Mexico through the Missouri and Mississippi systems. During years of ample moisture, some waters of extreme northeastern Montana undoubtedly find their way into the Souris River which heads in Saskatchewan, makes a big loop through north central North Dakota, returns to Canada's Assiniboine and Red Rivers and finally into the waters of Hudson Bay.

Briefly the Bureau of Land Management administers almost 8,300,000 acres in Montana; which accommodate 1,333,000 head of livestock. Forage value of "grass to meat" - is $11,000,000 per year or $15 each for every person in the State. Range conditions have declined 13% between 1957 and 1962. Improvements in facilities and management are necessary to bring range conditions back.

At the close of 1962, about 38% of the BLM lands in Montana were in good condition; 52% fair; 9% poor; and 1% bad. Big game animals using BLM lands are estimated to total 146,000, as follows: Deer 90,000; Antelope 50,000; Elk 5,500; Moose 530; and Mountain Sheep 100. Grouse of several species are native to Montana. Sage hens and sharp-

tails are found on the prairies, while ruffed, blue and "fool hens" are found in the timbered sections - Hungarian partridge and chukars are plentiful in the prairies. Montana probably produces more mourning doves than any other State. Wild turkeys, imported in 1955 are few but thriving. Hunting is important in Montana's economy and sport fishing is becoming increasingly so. Water is of great importance, and small impoundments materially contribute to wildlife needs.

THE BACKGROUND OF STOCK PONDS

The history of the need of water for livestock goes back to the earliest days of the West. The old Chisholm Trail which brought Texas Longhorns into Montana and other northern grassland States followed a course that permitted cattle, horses and cowboys to find precious water along the way. Early cattle wars, which spawned the present abundant crop of TV thrillers were usually fought over water, the most precious commodity of the West.

Before that, great herds of buffalo moved about over the vast prairies guided in large part by the availability of water. In fact, it might be said that the buffalo herds were the originators of the stock pond idea. Where live water was not available, they pawed out "buffalo wallows" where they drank and rolled in the mud to escape the torment of blood-sucking insects. Many of these animal-made ponds were as deep and effective as our modern stock "dugouts."

The Indians and the early scouts, guides and hunters knew where to find meat. The buffalo, antelope, deer and sage hens were usually reasonably close to water. Similarly today, with reasonable accuracy one can locate the waterholes on each side of Montana's prairie highways while driving 50 or 60 miles an hours. The little herds of Hereford and Black Angus cows and calves that stand out against the yellowing autumn prairies are a sure indicator that water is nearby. Significantly, when Montana's antelope season opens, knowledgeable hunters head for the same areas.

Stock pond development in Montana goes back a long way when stockmen themselves built watering devices to better distribute livestock use over their ranges.

Later, government assistance came into being. The Taylor Grazing Act of 1934 provides that 25% of the grazing fees shall go into range improvement. Later, in 1946, the Domestic Allotment Act provided Soil and Moisture funds for such range improvement. In later years, this fund has financed the bulk of the government's share of the program.

In Montana, approximately 2,600 small impoundments have been built on BLM lands since 1936. These contain roughly 11,000,000 cubic yards of earth, impound approximately 50,000-acre feet of water, and service a grazing area of about 4,000,000 acres. An equal number is estimated to have been constructed on private holdings.

The emphasis for BLM has been on stock water, erosion control and silt-settling basins, especially for the larger structures. Had these same impoundments been created with a greater multiple use concept in mind, they would have added more benefits to fish, wildlife and recreation. Waterfowl production, in particular, could have been materially enhanced had present knowledge been available to the range management planners of two decades ago.

This lack can now be met in considerable measure through the application of results of research by various organizations and individuals to existing and future developments. Unfortunately, the best sites for constructing impoundments have already been appropriated and it is becoming increasingly difficult to locate new ones. This fact alone makes it imperative that future plans be so designed that recreation benefits are given maximum emphasis.

The present study pointed toward improvement in the recreation possibilities of BLM lands, cannot separate ducks, antelope, deer, trout, bass, motorboats, and picnic tables from cows and horses - from water and grass. All are tied together, and in general, what is good for one is good for another. The greatest benefit to wildlife is to

assure that the range is grazed within its carrying capacity. This is more important than all of the artificial palliatives that can be devised. Wildlife and livestock need not be serious competitors. On the wide reaches of the Montana prairies and hills, there is room for both.

A recent memorandum addressed to Montana Range Users by the Billings office emphasizes BLM's new concept of administration. It results from the Classification and Multiple Use Act of 1964. It says, in part:

"As you know, authorized grazing users may apply for a permit to construct fences, reservoirs and other facilities on public lands to improve their operations.

"A new application form 7430-1 has been developed replacing the old form 4300-15. This new form provides two important changes in the conditions under which the permit will be issued:

1. Condition 5 has been expanded to assure use by the public and by wildlife of the public lands covered by the permit.
2. Condition 6 requires Bureau approval of specifications <u>prior</u> to construction by the applicant.

"To avoid violation of the Code of the Federal Regulations, it is mandatory that this new form 7430-1 be executed and approved prior to construction of any proposed improvement.

"In addition to emphasizing the new conditions, I wish to remind you that the permitted improvements are to be maintained in a condition that will promote and preserve natural beauty."

Our field contacts during the study were confined largely to personnel at the Malta and Miles City districts. These two administrative units encompass most of the Great Plains area in Montana. Montana Fish and Game biologists and refuge personnel of the U. S. Bureau of Sport Fisheries and Wildlife were most helpful and cooperative.

THE MALTA DISTRICT

In this district, real emphasis is now being placed on adjustments in range use by livestock and game to prevent further over-use. Resource surveys on the ground by BLM experts are now under way throughout the district.

It appears that much of the range that is being abused is where livestock are in trespass, but it is planned that this situation will be adjusted by the end of Fiscal Year 1966. In many cases, I was informed that what appears to be over-use is more fancied than real. In years past, many range users requested, and were granted, permits for more livestock than they actually ran. This practice creates an inflated value to an unwary ranch buyer and gives a false impression of actual range use.

Insofar as recreation is concerned, the District officials state that such emphasis has been lacking and the benefits of this sort have been largely incidental. They urge now that fish, game and other recreational needs be definitely included in the specifications on each impoundment project.

There is a real need for trained personnel to concentrate on fish and game matters and on general recreation, such as camp ground improvements, signs to guide the public, etc. Although the Montana State Fish and Game personnel are most cooperative, they are spread too thin to do the kind of

job that is needed if recreation is to receive the emphasis it deserves under the Bureau's new multiple use concept of administration. A trained fish and game specialist and a recreation specialist should be added to the District staff at Malta. Both would be expected to supervise activities in their fields, and in particular, to work with the engineers in developing new specifications for improving existing and constructing new projects.

The question of maintenance of installations looms large in this District. Previous policy, recommended by the Grazing Advisory Board, has shaped a program of sharing the cost of maintaining roads, trails, fences, etc. on a cooperative basis with the permittees. This has shown many weaknesses and often resulted in a lack of proper maintenance. It would appear more to the advantage of the government to assume responsibility for all maintenance and to secure Federal funds for this purpose. It would assure better maintenance of projects and avoid some of the complications of administration now evident.

The District Manager expresses himself as feeling that there are enormous possibilities of public benefit if fish, wildlife and recreation needs are planned in advance and integrated with future construction programs.

THE MILES CITY DISTRICT

This district lying mostly in southeastern Montana, has a more diversified character than the Malta section. Lands south of the Missouri River represent the true prairies; those north, the pothole region. The Missouri River was formed at its present location by the melting of the last great ice cap, so the lands south and west of the river show distinct differences

from those north and east through Montana, the Dakotas, western Minnesota and the Prairie Provinces of Canada. There the character of the glacial till creates literally hundreds of thousands of natural small water holding depressions. Thus, the approach to land and water management varies, delineated by the winding shorelines of the great Missouri.

The Miles City District provides excellent wildlife habitat. It produces one-half of the antelope harvested (10,000) and one-fourth of the deer (25,000) taken in Montana annually. It has good pheasant, sharptail, and sage grouse shooting. Montana is one of the most important producers of mourning doves in the United States, and contributes materially to the annual crop that is hunted further south. Reservoirs and other water supplies are very important to doves, as they are to sage hens, grouse, big game and waterfowl. The manager of the Federal Chas. M. Russell Game Range estimates that 750,000 to 1,000,000 doves are produced each year on the Range, most of them within 1½ to 3 miles of the Ft. Peck Reservoir.

All one needs to do to be convinced of the abundance of big game in Montana is to drive the highways or visit the small towns during the antelope and deer seasons and note the cars filled with red capped hunters coming home with 2, 3, and 4 carcasses lashed to luggage carriers on top.

But the big game seasons are not for Montanans alone. Parking lots at motels are crowded with cars bearing licenses from Missouri, Indiana, Illinois, Minnesota, California, and elsewhere. Some of the most expensive and elaborate hunting rigs that one can imagine pull in evenings with antelope and deer hair and blood smeared on them, while thirsty, happy hunters crowd into local

taverns and restaurants. Hunting is big business in Montana.

Sport fishing is of growing importance in eastern Montana, and if some modifications are made to several existing reservoirs and plans for future impoundments insure that fishing will be included as part of the Multiple Use benefits, the recreational goals projected in the instructions can be easily met.

Fifteen reservoirs in this District have been stocked with fish. Four are managed for trout alone, and while they do not provide suitable spawning conditions, the planted fish reach lunker size in a few years.

Six reservoirs are managed for bass and bluegills. Here, as elsewhere in fertile ponds, bluegills tend to outrun their environment and some rehabilitation control is planned. The tendency now is to plant only bass. The balance of the reservoirs are stocked with walleye and northern perch.

The U. S. Bureau of Sport Fisheries and Wildlife and Fish and Game Department supplies trout for stocking while the big Federal warm water hatchery located at Miles City supplies other suitable species.

Fishing areas are becoming increasingly popular. All are reasonably well used. Access is a big problem as people have trouble finding them. There is real need for maps, signs and publicity. Also, better road maintenance is needed.

Our inspection of several existing reservoirs found them one-fourth to one-half full. The reasons for this were unclear but it is suggested that the whole management program be reviewed to make sure that BLM reservoirs

are as productive of fish as possible. Future engineering design should definitely include the needs of sport fish. This District should have full-time wildlife biologists on its staff.

MONTANA IS A WATERFOWL PRODUCER

Montana is a real producer of ducks, especially the marsh dwelling puddle ducks such as mallards, pintails and bluewinged teal. Also, some Canada geese find suitable nesting habitat here.

To the great surprise of professional waterfowl experts, Montana in 1965 ranked ahead of southern Manitoba, and almost as high as the principal duck producing areas of North Dakota, South Dakota and Minnesota combined.

Here are the latest and as yet unpublished figures of duck populations in this cradle of waterfowl production:

2,191,000	Alberta, from the U. S. border to Edmonton
1,682,000	Saskatchewan - southern pothole region
889,000	North Dakota, South Dakota and western Minnesota
727,000	Montana, eastern prairie and pothole region
482,000	Manitoba - southern pothole type

These data were secured from officials in the U. S. Bureau of Sport Fisheries and Wildlife who make it their business to keep up on the annual trends of waterfowl populations, and on which the annual hunting regulations are based. This is done by trained pilot biologists who fly small planes at low level in a grid pattern on transects 18 miles apart - north and south and east and west. All water areas are listed within an eighth-mile strip. Duck use is recorded and identifications made as accurately as possible.

This pattern of observation was developed some 15 years ago and is used annually to survey the Dakotas, western Minnesota and the Prairie Provinces of Canada. In Montana, the only previous aerial survey by U. S. Biologists was made in 1958, and then only over the prairie area south of the Missouri. In 1965, all of eastern Montana was covered for the first time. Perhaps this reflects a gradually growing appreciation of the influence of stock ponds in Montana on waterfowl production.

Briefly, the survey showed that dugouts are not numerous enough to be of great significance, that stream numbers are about the same both North and South of the Missouri; there are about twice as many stock dams South as North; potholes to the North are four times as numerous as to the South; permanent potholes and lakes had a much higher rating for ducks than any other type; semi-permanent and temporary potholes South were less attractive than North; permanent stock dams were more attractive in South where there are fewer bodies of water than in North; properly built stock dams throughout the range country were used by many species.

Report summary: There is still adequate drainage to build at least two more stock dams per each three square miles, both North and South and that development of this program to its maximum would be of immediate benefit to both the livestock industry and to wildlife, particularly waterfowl.

It should be recorded that the past 3 years have been exceptionally good from the standpoint of moisture in Montana. Some report that 1965 was the best in 70 years. On the Chas. M. Russell Game Range surrounding the Fort Peck

impoundment, the average annual moisture is 7-9 inches. In 1965, it was 17 inches and Montana's statewide average reached 15 inches.

Also, it should be pointed out that the pothole area North has traditionally demonstrated advantages in the production of marsh dwelling duck species. These shallow natural depressions freeze each winter to depths that eliminate natural predators such as pike, bass and turtles. Also, freezing prevents infestation by carp, which roil the waters and discourage the production of aquatic plants.

COWS AND DUCKS

The subject of fencing to exclude livestock from impoundment areas has long received wide attention among waterfowl biologists. All seem in agreement that this is a good idea but raise questions about the economic justification unless it can be shown that fencing also materially protects adjacent spillways, prevents gullies, aids in upland game production, and provides advantages to the stockmen users.

The Montana Fish and Game Department in about 1942 initiated a program of improving wildlife habitat on some 25 impoundment reservoirs in eastern Montana with Pittman-Robertson funds in cooperation with the Montana Water Conservation Board, Grazing Service, Soil Conservation Service, the Northern Pacific Railroad and private individuals. Portions of the reservoirs were fenced as protection from livestock while a wide variety of aquatic, cover and food bearing vegetation was planted. The enclosures ranged in size from a few to as much as 300 acres. General observations of these enclosures

indicate that they were readily used by antelope, sage hens, sharptails, geese, ducks, sandhill cranes and practically all native wildlife species.

In 1953, several Pittman-Robertson experiments were initiated to more specifically measure the effects on wildlife of fencing stock watering ponds. The Department constructed sheep tight fences to exclude livestock from the upper ends and portions of drainage areas of six ponds in Carter County and six in McCone County. Unfenced control areas of similar size were established for comparison.

The average size of the 12 Carter County ponds was 1.32 acres and the 12 McCone County ponds 2.92 acres at high water levels. Similar studies on dugouts have included fenced areas only 40 to 50 feet away from the water line.

The reports of these experiments have all listed the results as "inconclusive," insofar as benefits to waterfowl were concerned. It may well be that the areas selected for fencing were too small and that the small islands of vegetation surrounding them created unusually attractive sites for predators.

Extensive studies of the subject have been conducted since 1950 in Stanley County, South Dakota by Dr. I. G. Bue and several associates. His conclusions are that the ideal waterfowl management practice is to hold livestock grazing intensity to that recommended by P.M.A., which for this area was then 15 cattle-days per acre-year. Fencing of selected areas was second choice, but complete protection of shorelines for long periods of time encourages the growth of bulrushes and cattails which reduce the attractiveness to nesting waterfowl. He states that some disturbance of shoreline is beneficial.

To gain a broader picture of the situation, it seems preferable to turn to experience gained over a period of two decades in the Federal Waterfowl Refuge program on large areas, including several in Montana.

Much was learned in the early thirties about the relation of livestock grazing and waterfowl production in the Sandhill region of northern Nebraska. It represents the southernmost part of the famous Great Plains waterfowl breeding complex. Once richly productive, the Sandhills area at that time had suffered from a combination of drought and overgrazing.

Two large Federal refuges were established in this region - Crescent Lake, of 42,635 acres, and Valentine, of 66,448 acres. Both have lakes, ponds and potholes lying within a rolling sandhill type prairie.

Both were fenced, and livestock either eliminated or drastically reduced so teal, mallards, shovelers, pintail, canvasback and others might return to their former productivity. Many stockmen complained bitterly about the loss of grazing privileges.

Lush vegetation soon returned, but duck production was disappointing. After a few years of careful observation, it was decided that the heavily matted grasses which resulted after the elimination of grazing were actually hindering nesting and were encouraging predation of skunks, coyotes, foxes and particularly bullsnakes. In addition, they were creating risky hazards of prairie fires. The policy of no grazing was abandoned, cattle were returned, haying began, and now the areas accommodate more livestock than they did before they became Wildlife Refuges. Duck production has responded as cattle browsed

the heavy cover down so that brooding ducks could make greater use of it. Setting hens like to look out.

The same pattern of management has been adopted at Medicine Lake Refuge in extreme northeastern Montana. This refuge has 12,000 acres of water within its 31,457 acre boundary. It is an excellent producer of all kinds of prairie waterfowl, yet at the same time, 726 head of cows and 581 calves used it for 3 months in 1965. In additions, 4,000 tons of native wheat grass hay were cut, and 1,000 acres of barley and wheat were farmed. Ranchers are glad to pay the $2 per animal unit per month for the good forage on the refuge.

Similarly, the 11,546 acre Federal Bowdoin Refuge near Malta ranks as one of the highest production waterfowl breeding areas in the Federal system. In addition to myriad ducks, pelicans, blue herons, cormorants and gulls are present while sage hens, sharptail grouse, pheasants, Canada geese, antelope and deer are numerous. Grazing helps to keep the vegetative cover in proper adjustment. From July 15 to November 15, a period of 4 months in 1965, 485 cows, most with calves, and 25 horses used the area, at a fee of $1.50 per head per month.

The huge - nearly 1,000,000 acre, Chas. M. Russell Wildlife Range surrounding the Ft. Peck flood control and hydro-electric project in north-central Montana is administered jointly by the Bureau of Sport Fisheries and Wildlife and the Bureau of Land Management. It is a dramatic demonstration that livestock and a wide variety of game animals, birds and fishes can live together peaceably - sometimes it seems, more so that the administrators.

The official policy of the Bureau of Sport Fisheries and Wildlife is that livestock grazing on wildlife refuges is important but must be considered as a "management tool to assist in obtaining wildlife objectives" and "utilized to remove excess forage." Further, that seasons of grazing use must be established so as to include wildlife values, particularly nesting cover and the reproductive capacity of the ranges and pastures. In other words, controlled grazing after the nesting season is a useful and beneficial wildlife management practice.

A STOCKMAN'S VIEWPOINT

Gene Etchart is a member of the 25-man National Advisory Board to the newly created Public Land Law Review Commission, and is a member of the National Advisory Board Council to the Bureau of Land Management. Mark Etchart, his brother, was recently elected President of the Montana Reclamation Association. Both have served in the State Legislature. Both are highly respected leaders in the livestock industry. Their opinions are important.

Gene Etchart has used the principle of fencing reservoirs on his ranch for about 20 years. He withdraws stock water through an ingenious pipe drainage system into tanks below the impoundments instead of permitting his cows and horses to constantly trample the edges and foul their own drinking water. He says that this system has also given him a source of clear cold water after the reservoirs and ponds are covered with winter surface ice. He maintains that the cost of fencing is good business. The forage within the enclosures is not permitted to grow too lush and matted. He turns his cattle in to graze it down after the "fly season" when the cows no longer seek water to ward off the "heel flies."

He recommends a program of fencing stock watering reservoirs, based on his own experience. He feels from his observations that benefits to waterfowl and other game naturally follow. His appraisal of game conditions in this part of Montana is that deer and antelope have increased 100 to 1 during the past 25 years. He attributes this to better administration of the public domain since enactment of the Taylor Grazing Act, to predator control, to the elimination of the once great herds of wild horses, to the construction of stock watering reservoirs, and to improved game management practices.

His brother, Mark, agreed with his analysis but expressed his dislike and concern over statements and advertisements coming out of some wildlife groups blaming the bulldozer for all of the ills of waterfowl. He insists that the bulldozer has been one of the greatest benefits that wildlife has ever had in eastern Montana.

Before leaving the Etcharts, we should briefly describe Gene's water control device. To modify an old-time dam with no outlet, he merely drives a 2-inch iron pipe through the earthen structure. A sharp-pointed wooden plug is inserted in one end of the pipe and a bulldozer is used on the other. When the pipe has been pushed through the dike, he uses a rod to dislodge the sharpened wooden plug which then floats to the surface, and a 2-inch stream of water comes gushing out below. To shut it off, he uses a rod 10 feet or so long (enough to go beyond the freezing line), twists it and thereby squeezes a plumber's rubber ball to expand and shut the pipe. He says he has tried twist valves, but doesn't recommend them. A frog got stuck in one of his once and he almost ruined a good dam digging out the frog. With his system, a long rod

would have pushed the offending creature, or any other debris into the lake. It is his idea and it seems to work.

RECOMMENDATIONS

As a result of the study of Bureau practices in light of its new obligations, the following recommendations are respectfully submitted:

1. The Bureau of Land Management should immediately increase its staff of wildlife and recreation specialists, particularly at District levels.

Sole reliance for advice in this field should not depend on the good offices and cooperation of the State Fish and Game Departments and the U. S. Bureau of Sport Fisheries and Wildlife. The Bureau of Land Management needs and deserves a staff of its own, closely integrated with the soil and range managers and engineers.

More personnel is imperative if the goals established by the Multiple Use Act and the recreation demands of the times are to be met. Such personnel should be classified at grades equal to the specialists in other fields.

Experience has shown that sole reliance of one agency on another for staff services and advice is not satisfactory. At one time, around 1945, a policy was established in Washington wherein all fish and wildlife experts of all land management agencies were to be concentrated in the Fish and Wildlife Service. Some biologists, particularly of the Park Service, were actually so transferred.

It was soon found that this policy was impractical. Budgeting and presentation of estimates to the Appropriation Committees of the Congress

became complicated and difficult. Fish and Wildlife Service personnel were unfamiliar with the basic, underlying policies of the sister agencies and, in turn, were more or less considered as outsiders. The experiment was largely a failure and should not be repeated.

2. Fencing of selected reservoirs should be adopted as a standard practice.

This should include the structure, all of the impounded water and an area of no less than equal acreage about the perimeter; i.e. - a 20 acre lake would have an additional 20-acre protective area surrounding it. Three or four times the water acreage would be better.

3. Livestock watering should be provided in suitable tanks and structures below the dam.

These should be a series of steel or concrete tanks, or a suitable stretch of natural stream. This arrangement prevents trampling the edges of the impoundment, erosion of the dams, improves water quality and encourages vegetative edges useful to nesting waterfowl and spawning fish.

4. Grazing on the enclosures should be permitted after the waterfowl, nesting and fish spawning seasons have passed.

As described by Mr. Etchart this should be after the "fly season" to avoid trampling and roiling the impounded water by livestock. The timing and degree of grazing should be established on the advice of trained District biologists and range managers.

5. Gates should be provided to permit entry of livestock during the specified times.

These small enclosures would be most welcome to the permittees, particularly for use as horse pastures at roung-up time. Fence construction should allow big game ingress and egress to and from the enclosure.

6. Classify impoundments to be fenced.

Only selected reservoirs should receive the above treatment. These should be of medium to large size, have good water supply and irregular borders. The more islands and peninsulas that can be included - the better for waterfowl. Nesting ducks and geese resent close neighbors. Islands discourage predators.

Such a classification of suitable areas by Districts will be essential to the budget process. Much information is already available.

7. Fishing can be improved with advance planning.

All new reservoirs should be planned with the need for the sport fishermen in mind. Several existing reservoirs can be improved.

8. Boating is possible on some areas.

To pleasure boaters and water skiers, water is as welcome as it is to a migrating goose. Some of the larger BLM projects can provide this opportunity. For such, engineering designs should include access sites, ramps and riprapping of the dams to avoid damage by wash.

9. Maintenance is essential.

Special crews with suitable equipment should be planned to take care of roads, fences and campgrounds. Empty beer cans and picnic debris are obnoxious - but ever present. Cleaning up the sites seems to be the responsibility of the land and water owning agencies. Funds should be budgeted for this purpose.

10. Signs are important.

Signs are necessary to guide users of the public domain to the areas available to them. Maps, signs and information of this sort are not inadequate and should be vastly expanded. Advertising of recreational opportunities will pay big dividends.

IN SUMMARY

Conservationists, particularly in the fish and wildlife field are pleased and gratified with the recent emphasis that has been given to recreation in the policies of the Bureau of Land Management. They will enthusiastically support further efforts in this direction.

Perhaps the general attitude can best be summarized by a comment of J. Clark Salyer, the long-time and highly respected former Chief of the Division of Wildlife Refuges in the Bureau of Sport Fisheries and Wildlife, in answer to my query about his opinion of stock ponds. He replied: "Tell the people in the Bureau of Land Management that I have one complaint. They aren't building stock ponds fast enough."

OREGON

Bureau of Land Management land holdings in Oregon offer excellent opportunities to improve recreational benefits to the public - particularly for fishing. Holdings are listed as totaling more than 15,600,000 acres of public domain and other classifications.

Of greatest interest to fishing improvement opportunities are the so-called O&C lands lying in the Coast and Cascade Range and the Klamath Mountains. They consist of approximately 2,600,000 acres originally granted to the Oregon Central railroad companies, later called the Oregon and California Railroad Company, to aid and encourage the construction of railroads. They were later forfeited and returned to the Federal Government by revestment of title. The term "O&C lands" as often used includes reference also to the reconveyed Coos Bay Military Wagon Road lands, which are public lands in western Oregon that were once granted to the State of Oregon to aid in the construction of the Coos Bay Military Wagon Road, but were later forfeited and returned to Federal ownership by reconveyance.

From the standpoint of administration, the O&C lands in the coastal mountain ranges of Oregon are probably the most difficult to handle of any in the vast BLM 465,000,000 acre system. They are fragmented and checkerboarded, with few solid blocks of ownership. They provide the native home of the giant Douglas fir, western hemlock, ponderosa pine, sugar and western white pine, cedar, spruce, and other associated species of trees.

The Bureau is responsible for the management, development and protection of almost 41 million acres of commercial forest land. Of this total, 2,392,096 acres in western Oregon are generally recognized as one of the nation's most productive and valuable commercial forest properties. During 1964, more than 1½ billion board feet of timber, valued at 41 million dollars were sold. Managing such a natural resource on a true multiple use base is a most difficult task.

The area westward of the coastal ranges is seasonally well watered. The moisture-laden air brought in by the Japanese current is halted by the mountains and spills as much as 200 inches of rainfall per year into some of the forested hills. Average rainfall ranges from 60 to 90 inches along the coast and the extreme 200-inch record is along the summit of the Coast Range. Seventy per cent of the rainfall occurs from November through March, when up to 6 inches may fall in 24 hours. Summer precipitation is limited to light rainstorms, rare thundershowers and coastal fog.

This creates an environment which has made the area famous for Chinook and silver salmon, steelhead, sea run trout, shad and many other sport fishes. It also leads to what the natives call "mountain freshets" (but to most of us - raging torrents) during winter and spring seasons. The logging debris from the upper reaches wipes everything before it, eventually piling up into impenetrable tangles which often block the migration of anadramous fishes on their annual journies to the upper spawning gravels. In spite of seasonal heavy rainfall, there are many periods when the streams in the upper reaches run almost dry during long, hot summers.

In this environment, there is much that can be done by BLM on BLM lands and in cooperation with others to improve fishing for both the thousands of resident and non-resident sport fishermen along the inland and coastal waters, and the important commercial fishery off-shore. All must depend upon suitable fish spawning grounds and a continuous flow of water sufficient to bring the young out of their natal gravels and nurture them to a size where they may return to the brooding waters of the Pacific.

STREAM IMPROVEMENT

During our Oregon survey, numerous conferences were held with fishery experts of the Oregon State Fish Commission, the Oregon State Game Commission, the U. S. Bureau of Sport Fisheries and Wildlife, the U. S. Bureau of Commercial Fisheries, the Soil Conservation Service and knowledgeable individuals, including veteran State Senator Andrew Naterlin who has long been a leader in fisheries management in the State Legislature.

All agree that BLM can make a major contribution to the sport fishery program in the Coastal area of Oregon by:

(1) Administratively insisting that logging operations be conducted with stream protection constantly in mind. Logging methods which build roads close alongside flowing streams, and churn stream bottom gravel beds filled with salmon and steelhead nests, pose constant problems to fishery workers. Piles of slashings tumbled into stream beds and washed into impenetrable log jams by

Oregon "freshets" are a constant menace unless properly disposed of at the cutting sites. Any practices which tend to protect stream borders and to eliminate or control siltation that smothers the spawning beds with sticky mud are appreciated by the fishing interests.

(2) Continue and expand BLM's excellent program of eliminating and clearing log jams. This operation should consider the advice of a trained fishery biologist. In many instances the obstructions should be preserved as spawning beds.

(3) Institute a program of slowing the flow of fast-running streams by the installation of baffles, check dams and stream diversion dikes low enough and so engineered that anadramous fishes can readily negotiate them at will.

(4) Construct impoundments in headwater streams to hold rainfall and augment the flow downstream during periods of water shortage.

(5) Employ a trained fishery biologist to work with the engineering staff of BLM and workers in the State Fish and Game Commissions and the U. S. Bureau of Sport Fisheries and Wildlife to select streams to be improved and to technically supervise the removal of alteration of log jams and the installation of stream improvement devices.

(6) The first task of the biologist should be the preparation of a field guide on instructions for crew supervisors outlining methods of procedure. Several good publications are available from the Oregon

Fish Commission, the Pennsylvania Fish Commission and elsewhere which could be used as a basis for a new BLM handbook on stream improvement. With proper credit acknowledgments, sister State and Federal agencies would be glad to provide technical information, photographs and line drawings.

THE JOB CORPS

A program such as suggested herewith is a "natural" for the Job Corps. The Portland Service Center has three of these installations in its district at present and could use more. These are patterened after the highly successful CCC camps of depression days in the early 30's and have complements of around 200 men each.

Two are now operating in the O&C territory of BLM holdings. One in Josephine County in the general vicinity of Grants Pass, Oregon has had as a part of its work program the construction of devices on 26 fishing streams to divert trout and steelhead from the intakes of irrigation ditches. Here, the Game Commission furnishes materials and the BLM Job Corps camps, the labor.

The other Job Corps camp is in the Tillamook area, where various public projects receive the benefits of this work camp idea.

Both could be utilized in the stream improvement programs outlined herein. Additional camps could be used. The need is great and the full cooperation of Federal and State fishery agencies is assured.

PLYMPTON CREEK

During our inspection, we arranged for an examination of stream improvement devices installed by the Oregon Fish Commission on

Plympton Creek, a small tributary of the Columbia River some 35 miles upstream from Astoria. Here, the Fish Commission, during recent years, has constructed 27 low baffle dams to rest their effectiveness. They are designed to provide checks to the rapid flow of the stream, for the deposition of spawning gravel beds above and the scouring of deep holes below the structures.

Checks during the spawning season of 1965 showed them to be very successful. The gravel beds above were actually over-used by spawning chinooks and silvers. The ponds below held as many as 35 large chinooks during critical summer water periods. More than 400 chinooks have used this short coastal stream during each of the past two years.

Plympton Creek conditions can be duplicated many-fold on BLM lands in the O&C area with a resultant major benefit to sport fishing in the Northwest.

During extremely high water and flood conditions in 1964 which washed out bridges across Plympton Creek, the fish improvement structures held and actually improved stream-bed conditions.

Our goal of increasing sport fishing by 3 per cent per year can easily be met here with little cost.

SCS and PL 566

BLM officials at the Regional and State levels suggest that one of the best means of increasing fishing productivity of O&C and other Bureau lands in Oregon is to use some of the funds and manpower that may be made available in the future to accelerate the cooperative program already under way with the Soil Conservation Service of the U. S. Department of Agriculture.

BLM lands have been made available in cooperative PL 566 projects administered by the U. S. Department of Agriculture. Recreational and water control structures have been financed as part of the planned land and water approach to small watershed development under PL 566. There is no pioneering needed here - only funds and manpower to carry the plan further forward.

The small watershed improvement program under PL 566 authorizes the Secretary of Agriculture to cooperate with local organizations in planning and carrying out works of improvements for flood prevention and/or for the conservation, development, utilization and disposal of water in watersheds of sub-watershed areas smaller than 250,000 acres.

Under this authority, USDA field parties have surveyed all of western Oregon for potential PL 566 projects. The surveys provide excellent information as a guide to long-range coordination and planning of possible future projects for all agencies.

In the Willamette Basin, 126 separate tributary watershed areas were studied. Basic data on land and water use and water related problems were analyzed. These included soil types, rainfall, vegetation, siltation, land use, recreation, fish and wildlife and in fact, a thoroughly comprehensive analysis of each area. PL 566 is aimed primarily at land protection, flood prevention, water management, drainage, irrigation and domestic water supply. The emphasis must be on agricultural water management, but this recognizes recreational uses such as fishing, boating and other water-borne sports.

In the Willamette Basin, of the 126 tributary watershed areas studied, 63 were excluded from further study at present. The other 63 are scheduled for further survey and study as probable sites for the expenditure of PL 566 funds.

Similar studies, although not as detailed, have been made of the entire coastal area. They are available in a valuable series of reports for use as needed. They not only catalogue existing knowledge of the natural resources of the various areas - they also provide valuable maps of the location of BLM lands in relation to National Forest, private and other land holdings in the several watershed units. These are:

Willamette River Basin - Oregon
USDA Interim Report
Economic Research Service, Forest Service, Soil Conservation Service, Nov. 1964

Middle Coast Drainage Basin of Oregon
Economic Research Service, Forest Service
Soil Conservation Service Sept. 1964

South Coast Drainage Basin - Oregon
Economic Research Service, Forest Service
Soil Conservation Service Feb. 1962

Upper Willamette Resource Conservation and Development Program - Oregon

Assisted by U. S. Department of Agriculture
Soil Conservation Service Dec. 1964

All of these reports reflect a remarkable degree of cooperation between State and Federal land and water use agencies. They can well be used as a basis for further BLM activities in western Oregon.

LANDS AND WATERS
CLASSIFICATION FOR RECREATION

An important item for BLM consideration is the classification and withdrawal for public recreational use, all important streams on BLM lands in Oregon. Such action alone will more than meet the Bureau's goals under the Multiple Use Act, expecially in the western mountain and coastal areas.

Various studies and estimates of competent personnel, including those of the Outdoor Recreation Resources Review Commission point to continuing demands by the public for facilities such as Coastal Oregon provides.

For example, 658,000 people visited the Siuslaw National Forest Recreation areas in the basin in 1963. Over 510,000 were primarily interested in (1) sightseeing (2) fishing (3) picnicing and (4) camping. The Forest Service estimates an eight-fold increase in this demand by the year 2000. Lane County recreation data for 1963 indicate that 51% or 840,000 recreation visits were to the coastal areas, an increase of 75 per cent over 10 years ago. So go the statistics, estimates and predictions in publication after publication.

Oregon is in an extremely fortunate position to meet future recreation demands. A wise legislature years ago passed a law which keeps Oregon's spectular coast line in public ownership. California is spending millions of dollars to buy back for public use coastal lands which went into private ownership many years ago. On the

Atlantic Coast, one can travel from Maine to Florida without finding a public beach where a toe can be wet by the waves of the Atlantic Ocean except on a pitifully few strips set aside years ago as Federal Wildlife Refuges. Now, the Federal and State Governments, at great expense, are acquiring private lands for public park uses.

Oregon dedicated its shoreline to public use while there was still time. Now is the time to dedicate publicly-owned interior streams and recreational sites on BLM lands to permanent future public uses. From the standpoint of fishery management, the inland streams are more important than the Coast and sport fishing is one of the principal ingredients of a permanent recreational future for Oregon. I urge the Bureau of Land Management to become a leader in dedicating inland areas to recreation as Oregon's legislature did long ago to the Coast.

WARNER VALLEY

On September 13, 1962, the Bureau of Land Management, through its local office at Lakeview, Oregon, took what is probably the most positive step in a long history of studies and negotiations toward making Warner valley in south central Oregon a meaningful wildlife area. Conservationists applaud this action and confidently hope that it will lead to a permanent arrangement to benefit wildlife and recreation in this part of the State.

Warner Valley is 60 miles long north to south, and 4 to 6 miles wide east to west. It lies immediately west of Hart Mountain in south central Oregon, the western face of which is a gigantic block of tilted lava rising almost perpendicularly some 4000 feet from the

floor of Warner Valley. A mountain goat would find tough going at most points on this side, although a few precipitous little canyons notch the wall enough to permit travel into the heart of the mountains on horseback.

Historically, Warner Valley is linked to Hart Mountain as a conservation project, although not consummated as a reality. President Franklin D. Roosevelt signed an Executive Order on December 21, 1936 which set aside more than 220,000 acres of mostly public land as the Hart Mountain National Antelope Refuge. Officers of the old Biological Survey, a forerunner of the present Fish and Wildlife Service, and the Oregon State Game Commission had dreamed of establishing a home for antelope and other game species in this area for at least 16 years.

Warner Valley was then envisioned as a logical part of a great National Wildlife Refuge. Hart Mountain, with elevations ranging from 4,400 to 8,020 feet for antelope, deer, grouse, mountain sheep and other wildlife species, and Warner Valley, with its marshes and sloughs for ducks, geese and other marshland species. The Valley has always been the ancestral migratory path for antelope and deer into the more hospitable winter climes of northern Nevada and California.

Hart Mountain Refuge became a reality 30 years ago, but Warner Valley never materialized as a wildlife management area. However, conservationists have never lost hope and perhaps the recent action by BLM may lead to that accomplishment.

In 1951, the Bureau of Land Management, the Fish and Wildlife Service, and the Oregon State Game Commission entered into a cooperative

agreement with the objective of formulating a multiple purpose plan for the development and management of certain lands in the Valley. This plan was designed to provide maximum utilization for wildlife, domestic livestock and recreation.

In recognition of its multiple use aspects, the Bureau of Land Management in 1960 determined that 65,400 acres of public domain lands in Warner Valley held high public values for livestock grazing, recreation and other desirable compatible public uses. These were designated as a multiple use management area and it is planned that they will so remain under Federal ownership.

The filing for 37,500 acre feet of water surplus to existing filings is in furtherance of this coordinated plan. Approximately 4,000 more acre feet would be for agriculture livestock pasture and 33,500 acre feet for waterfowl habitat.

Two diversions would be made in the natural flow of surface waters northward from Twenty Mile and Deep Creeks to Hart Lake, and after intermingling with the flow from Honey Creek, would spread out northward toward Flagstaff Lake. All surplus waters now eventually reach Campbell Lakes and thence flow into Bluejoint Lake, the final receptacle in this vast chain of flat land sumps.

The proposal now is to gain legal control of the surplus waters and by a series of canals and gates, divert them into the intermingled potholes and sloughs rather than permit them to dissipate themselves in the broad flatlands of the usually dry lake beds. Good engineering plans have been developed during the cooperative planning stages. There is little doubt that the plan could be very beneficial to waterfowl when put into effect.

The Oregon State Engineer, who approves all water control diversions in Oregon, has attended numerous conferences on the plan and the data supplied his department seems to satisfy his requirements. Stockmen involved appear to voice no opposition. Public hearings have been held in Lakeview. The Warner Valley Livestock Company, chief spokesman for the ranching interests has merely asked the State Engineer to keep them informed of developments. A 21-mile drift fence running north and south along the western side of the Warner Valley has already been constructed by BLM to better control grazing use. This is a part of the over-all management plan.

It is felt in the Oregon BLM offices that the requirements of the State Engineer have already been met and that the water right for 37,440 feet would be granted if action were pressed by the Bureau. However, this entails an obligation to develop the area by providing certain water diversion structures and future engineering studies within one year. These will cost around $75,000. If not forthcoming within 12 months, the filing might be declared invalid.

Thus, the question is:

Can $75,000 be found to effectuate this desirable project now, or should the Bureau delay pressure on the State Engineer for action on the filing until a more auspicious time budget-wise?

Decisions as to the eventual administrative pattern are of no great importance at present. If a good water use pattern can be established, wildlife will benefit regardless of whether BLM, the

Bureau of Sport Fisheries and Wildlife, the State Game Commission, or a committee representing all three, inherit the management responsibility.

The course for BLM to follow at present appears to be dictated almost wholly by budget considerations.

I hope that the establishment of a workable wildlife management plan for Warner Valley, a lifetime dream of many conservationists may finally be realized. If so, it will earn well deserved praise and plaudits for the Bureau in national conservation circles.

NEVADA

A Complicated Pattern of Administration

Nevada is the most "public land" of the eleven western public land States. In some ways, it focuses attention on problems of public land administration to a greater degree than any of the others.

It is huge, 7th in size in the United States, and is listed as having some 70 3/4 million acres within its broad boundaries. It is dry, much of it with only four inches of rainfall a year, and is, therefore, known as a "desert" State. The higher mountains collect up to 16 or more inches of rainfall, and many of their tops are clothed with Pinion and Ponderosa pine, juniper and similar evergreen mountain species. Canyon bottoms occasionally ribbon the slopes with deciduous poplars, quaking aspen, willows and chokecherries where sufficient moisture collects to form small streams and seeps which dissipate and vanish before they reach the desert floor. Some of these high mountain-side streams support native trout, which are comparatively safe from human interference because they are so isolated.

During all of the years since 1781, the U. S. Government has been successful in ridding itself in Nevada of only 2,725,000 acres for schools, institutions and other miscellaneous purposes, and 5,000,000 for railroad grants.

Railroad grants were made to encourage the early construction of transportation lines to the gold fields of California. They spread in a wide band of checkerboard ownership east to west across the northern

part of the State. Centered is the old roadbed where the early iron horses opened the West from Ogden and Salt Lake in Utah to San Francisco and the promised lands of California. Now, modern diesels pull mile-long trains across this ancient path.

In spite of all of the early inducements for the disposal of public lands to private ownership, only some 10 million acres have been so converted. As of now 85½% of the State is still in Federal ownership, 60 million acres of which are under the jurisdiction of the U. S. Bureau of Land Management. Other large acreages are the responsibility of the military agencies, the U. S. Forest Service and the U. S. Fish and Wildlife Service. The State of Nevada, by circumstance or design, owns practically no lands or waters useful for fish and wildlife management.

This leads to a rather unusual situation in the field of fish and game administration. The State, by accepted legal concept and long-standing tradition, is responsible for the management of resident fish and game. Waterfowl are excepted under international treaty, but mountain sheep, deer, antelope, grouse, quail and all nonmigratory species come under State jurisdiction for management purposes.

Yet, the State of Nevada, unlike practically all other States in the Union, has only a negligible financial stake in the lands and waters that are the basis for all wildlife management. They control the harvest and collect all of the hunting license revenues. In addition, they receive one of the largest allotments of Federal Pittman-Robertson

wildlife funds and Dingell-Johnson fisheries funds, which are allocated one-half on the basis of State land area and one-half on the number of license holders.

The role of BLM on its vast holdings in Nevada is to manage the land and its cover. If there is overgrazing and abuses from either livestock or game, BLM is held responsible in the eyes of the public. They can control livestock numbers but they hold no authority to manage the numbers of game animals. When disastrous fires occur, as in 1964, BLM is looked to for the reseeding and rehabilitation of the devastated ranges for both game and livestock. Little help comes from State agencies. Yet, if there is overuse by game on some winter ranges, as at times there is bound to be, BLM has no power except persuasion to remedy the situation.

Perhaps a few basic principles in fish and game management in the West might be enunciated. These are:

(1) BLM has responsibility to manage habitat and while it has no responsibility for wild animals numbers, its personnel must know how many there are, the periods of concentrations and the effects on the range. Good management can never separate forage for deer and antelope - a BLM responsibility - from the actual numbers of deer and antelope - a Fish and Game responsibility.

(2) To properly manage BLM obligations in this field, the Bureau must have a sufficient staff of men in its District and State offices trained in wildlife habitat practices - men who

know how to improve forage, water and cover specifically for wildlife - men who can prepare plans and specifications and coordinate such programs with other BLM over-all land management assignments.

(3) Conduct periodic habitat management workshops to train personnel in habitat management projects; how to do stream improvement projects; how deep to plant bitterbrush; prescribe heights of fences to permit antelope movements; minimum pool size for fish; forage exclosures, etc. Since no workshop or conference such as this is being conducted by either State or Federal agencies, perhaps BLM should take the lead and go ahead with this idea themselves since their major responsibility is land management.

(4) Specific habitat management projects which BLM should implement to the fullest extent possible in District programs include:

(a) Water developments:

- guzzlers for upland game birds and big game.
- catchment tanks for big game such as bighorn sheep.
- spring developments for antelope, deer, bighorns.
- reservoirs and ponds for fish life with minimum pools prescribed in permit specifications.

(b) Forage Production:

- seed mixtures of various browse, forbs, and grass species for benefit of all game.
- break up extensive sagebrush habitat types with interspersion of various other species of browse, grass, and forbs to benefit all species of game, especially deer, antelope, bighorns, chukars and sage grouse.

- rehabilitate native meadows. Meadows are key wildlife production and maintenance areas and need restoration and management treatment.

- plant aspens, chokecherries, willows, squaw apple, and other species along waterways to provide both cover and food, especially on burned over fire areas. Such stream cover also cuts down on bank erosion and helps maintain constant water temperature for fish life.

- develop marshlands for habitat. Protect by fencing from overuse. Rehabilitate by planting desirable species for food, nesting habitat, cover, etc.

(c) Cover:

- plant trees (aspen, willow, etc.)

- plant cover along stream banks for quail.

- provide artificial nesting platforms for geese, nesting sites.

(d) Miscellaneous:

- encourage reestablishment of native wildlife species exterminated earlier by man. Bighorn sheep could be reintroduced into several mountain ranges where they have been eliminated.

- cooperate with State and Federal wildlife agencies to control trash fish and plant desirable game species.

- identify habitat used by rare or endangered wildlife - provide habitat management plans and habitat restoration projects to improve habitat conditions.

- encourage establishment of access roads to encourage hunters and fishermen to harvest the annual wildlife crop.

- plan and develop various hunter and fishermen camps to encourage wider use of BLM lands and harvest wildlife utilizing lands administered by BLM.

(e) Fisheries:

- construct reservoirs with plans for fish habitat as well as other means such as watershed, flood control, irrigation, etc.

- develop streams to increase fisheries habitat. Those ideas, particularly applicable to Nevada are useful anywhere in the West, and are therefore included in this report.

ELKO DISTRICT

Here, as much as any spot in the West, BLM is performing a major task of range rehabilitation by restoring ground cover to a vast devasted land.

The dry and windy summer of 1964 brought range disaster to the Elko district. Thirty lightening fires at widely scattered spots burned at one time during August. A huge grass fire started by accident at a silver mine swept out of control for days as high winds pushed it racing across the hills. More than 300,000 acres were burned in spite of all of the efforts that could be mustered. BLM threw all of its resources into the fight aided by men and equipment from cooperating groups and the local agencies. Local ranchers and the Southern Pacific Railroad contributed $60,000 to the cost of fire fighting. The State of Nevada's share of BLM's fire suppression costs on State lands came to $130,000. No State funds were then available and the bill is still unpaid. I understand that litigation may be necessary to force equitable adjustments.

Since then, BLM has undertaken a mammoth rehabilitation program. Roughly, there have been:

6,000 acres plowed to control cheat grass and then seeded with crested wheat grass.

2,875 acres seeded with bitterbrush, a favorite wildlife food plant.

67,000 acres scarafied and seeded with crested wheat grass.

11,000 acres seeded from the air with mixed grasses and forbs, including clover and alfalfa.

15,000 acres ripped for seeding in a contour pattern.

150 miles of drift fences installed to protect plantings from livestock.

To date the Bureau has spent $1,430,000 for the above rehabilitation program. The Nevada Fish and Game Commission has provided negligible assistance. Other than advice and the temporary assignemtn of local equipment their aid toward habitat management seems to be typified by the lone experience in a cooperative range rehabilitation project where 2,915 acres were seeded. BLM spent $31,238 of Federal funds. The Fish and Game Department spent $225 of State funds.

Out of this operation, BLM developed its "Midas Planning Unit", an attempt to intensively study the needs of a large land area and to systematically record the costs and results of a scientific restoration program. It will provide an analysis of individual resources, land tenure and resource interrelationship. It has already been accepted by the Bureau as the forerunner of similar approaches elsewhere.

Briefly, the Midas Planning Unit includes 1,015,633 acres of public land and 545,428 acres of private land, or a total of 1,561,061 acres. This is an area roughly twice the size of Rhode Island and one-half the size of Connecticut. Elevations range from 8,786 feet at Beaver Creek to 4,500 at the town of Battle Mountain. Precipitation averages 6.5 inches on the desert to a possible and occasional 25 inches at 8,000 feet in the Tuscarora Mountains. Stream runoff is heavy in the spring, but the waters usually dissipate and sink into the ground before reaching the Humboldt River, the principal drainage outlet for all of northeastern Nevada.

Vegetation is typically a high desert type sagebrush with an understory of mixed grasses, and at higher elevations of 7,000 feet and above, mixed with serviceberry, snowberry, and chokecherry. In the higher elevations, strands of aspen and willow follow the water-courses down off the mountains.

The entire area is grazed by cattle, some sheep and a few horses. On some of the private holdings, large hay meadows are watered from springs and seeps coming out of the adjacent high mountain ranges. There are 17 ranch operations licensed for using 36,775 cattle,

300 horses and 19,500 sheep on BLM lands. There are about 20 stock water wells in the Unit and an excellent potential for additional development of wells and reservoirs as well as more efficient use of irrigation water. Mining is important to the area. Cooper, gold, bornite, lead and silver are produced, with bornite and gold predominant. Recreation is confined to big game hunting and limited fishing. During the fall hunting seasons, eager hunters bring a "boom town" atmosphere to the local communities.

The Midas Planning Unit is progressing in good fashion. Range surveys are scheduled for completion in 1965. During 1961, 1962 and 1963, BLM and SCS personnel made cooperative pilot soil surveys in the south east one-fourth of the Unit. A cooperative study by the Nevada Department of Conservation and Natural Resources and the U. S. Department of Agriculture is underway to catalogue and define water and related land resources. Twenty-two specific planning projects are in operation. These will lead to the classification of certain areas for retention in public ownership and specify fragmented and other areas that should be disposed of through sale and exchange.

The Midas Planning Unit idea is good. It is providing detailed plans for the future management of this huge area, and is pioneering planning techniques which others may well follow.

MONTGOMERY PASS

A beautiful potential recreation site lies directly southwest of Elko by 230 crow flight miles. It is 135 miles south by east of Reno and 40 miles due north of Bishop, California. Here is a most

intriguing opportunity for the Bureau of Land Management to demonstrate by action its intent to implement its newly acquired recreation responsibilities. Here, in dramatic fashion, the concepts of many of those who sponsored and fought for the Classification and Multiple Use Act can be brought to life.

This spot is located at Montgomery Pass, close to the Nevada-California border on U. S. Highway 6, which is one of the two travel arteries that connect California's Owens Valley country with Nevada's Lake Tahoe and Reno.

This whole country is becoming increasingly popular for campers, rock hounds, skiers and others who seek weekend and vacation time escape from the crowded and smog plagued Los Angeles environment. The gaming tables and casinos of Nevada also hold a lure for many.

Here, at Montgomery Pass, on BLM lands rests quietly and until very recently an unrecognized recreational jewel. Outstanding fishing ranging from giant trout to bass and bluegills could be created. Beautiful camping spots for trailers, shelters, daytime picnics, and even for year-round cabins could be established. A small store, restaurant and accompanying casino is already located nearby. All this lies in the heart of the high desert that typifies this country with towering, snow capped Boundary Peak and Montgomery Peak a few miles away.

Specifically, mountain water has recently been offered to BLM which could create five fishing lakes, ranging in size from 20 to 8 acres in size. In addition it would supply all domestic water needs for a large recreational development.

Mr. Charles Smith, of Montgomery Pass, whose mail address is Benton, California, is a gradually retiring cattle rancher who is now willing to enter into an agreement with BLM to donate all of his surplus water to the Government to make the project a reality. His ranch lies on the west side of Queen Valley immediately below Boundary Peak, the highest point in Nevada. It is listed with an elevation of 13,145 feet. Adjacent Montgomery Peak in California is 13,445 feet in elevation. These snow-capped, moisture-catching mountains provide a constant source of water through seeps and springs to mountain side streams, two of which dissipate their waters onto the slopes of the Smith Ranch. Charlie Smith claims legal rights to these two water sources. One he now captures in small hillside reservoirs and pipes to his ranch for domestic and livestock use and to irrigate some 80 acres of hay lands. The other is unused. He is now cutting down on his ranching operations and claims to have from both sources a surplus of 5 acre feet of pure cold mountain water per day, 365 days a year, that can be made available for this recreation plan. This should be sufficient to keep the five fishing reservoirs full and also to provide a surplus to pipe to a new pasture development which he wishes to establish on the east side of Queen Valley. The whole thing appears to be a project where mutual benefits can be derived both by the public and the ranch owner.

If further engineering studies find the water rights to be valid, the source continually productive, piping costs feasible, etc., the creation of the 5 fishing lakes should be undertaken.

Core drillings will be needed, estimates of capacity and area refined and a thorough going study initiated.

Hard cores for the dams are already in place. They were built before 1898 when the Southern Pacific Railroad opened a 300-mile-long narrow gauge spur from its main line at Tonopah, Nevada to Owens Lake in California. Alkalis, particularly potash, were essential to the smelting of gold and other precious metals being brought from the rich mountains surrounding Gold Point, Gold Field, Silverpeak and other early mining communities.

With pioneer equipment, which consisted largely of picks, shovels, wheelbarrows, dynamite, horses, mules and Fresno scrapers, and mostly with Chinese coolie labor, the narrow-gauge rail line gradually ascended Montgomery Pass westward across the White Mountains. Then it dropped abruptly to the floor of Queen Valley, the present locale of Charlie Smith's Herford Valley Ranch. From here it wound southward to the broad expanse of alkali encrusted Owens Lake in California. Its trains hauled millions of tons of alkalis from the desert evaporating ponds in Owens Lake to the gold and silver smelters of south central Nevada. Due to changes in manufacturing process, the line was abandoned in 1925 and its roadbed title (if any ever existed) reverted to the U. S. Government. The potash mines at Owens Lake still endure.

Now, on BLM lands on the west slope of the White Mountains remain unused five abandoned railroads fills, most of them 70 feet deep, across the deep canyons which cut the west slopes of the mountains below Montgomery Pass. They are composed of mixed clay and stone and have been compacted by the weight of the millions of tons of freight that have passed over them since 1898. Huge 12-foot culverts drain their bottoms.

They appear to be ideal sites for restoration at a very reasonable costs. Because of the location near the top of the White Mountain divide, there is little danger of flash floods from the drainage area above, although the impoundment slopes should be reinforced to meet modern engineering design. Spillways would need to be provided. Gates at the bottom to control flow through the existing culverts would need to be designed and installed, and access trails around the perimeter of the new lakes provided. A large camping complex can be established immediately above the lakes.

SCS engineers have made some studies of the fills and dikes and report that their initial observations indicate them to be feasible for impoundment purposes. They favor the idea.

A pipe line would be needed to bring water from the west side mountains across Queen Valley to the uppermost installation on Montgomery Pass - the camping and recreation site. This is estimated to be about 5 miles. Montgomery Pass is recorded as 7,132 foot elevation.

Water intake from Queen Canyon above the Smith headquarters is reported to be 7,200 feet and on another stream a mile or so westward in Morris Creek, 8,000 feet. Thus, there seems to be adequate elevation pressure to create gravity flow across the Valley and into the mountain pools on the east side below Montgomery Pass.

The area abounds in historic lore. A railway tunnel through the mountain lies just above one lake. Old caves where the Chinese coolies lived can be found. The whole country is rich in mineral deposits and is a rock hunters paradise. Many abandoned mines are in the area. Legend has it that early Indians brought pure silver out of Morris Creek Canyon and sold it in Bishop, California. Miners tried to follow them to discover its source, but the exact location of the rich vein still remains a mystery. Bishop, California is an important spot to the movie and TV industry. Nearby Alabama Hills under the spectacular Sierras provide the locale where the bad men jump off the rocks onto careening stage coaches, shoot the poor driver and escape with the beautiful and frightened heroine. The original Pony Express rider used Montgomery Pass on his race between way stations.

Present travel across Montgomery Pass on Highway 6 is quite heavy for that country. We were informed by the Highway Department that in 1964 a daily average of 579 vehicles were tallied, 146 commercial, 392 out of State and 41 from Nevada. Practically all of the out of State vehicles were from the Los Angeles and San Francisco areas.

This area lies in a section of little wealth. Mineral County in which the site is located and Esmerald County, 4 miles south have both been officially designated as "depressed areas" and have received A.P.W. funds. About $118,000 of such moneys were used by BLM to develop facilities at Walker Lake, which went mostly for range improvement, roads and fencing. A new recreation facility bringing in new tourist and recreation money should appeal to those who administer this program.

Esmeralda County has a listed population of 0.2 people per square mile. In 1960 it had 619 people, in 1965--381. Mineral County has .17 people per square mile and has held its population at around 6,400 since 1965. Many of these are transient mine workers.

My observations were completely preliminary but I believe they justify a thorough engineering and feasibility study. In the meantime steps should be taken to reach agreement with Mr. Smith on water rights.

A map of the area, with the locations of the proposed lakes and the pipelines proposed, is included in the photographic supplement to this report.

CALIFORNIA

Pressures, Pressures, Pressures

Increasing future hunting and fishing opportunities on BLM lands in California is a complicated task. California is a huge State, ranking in size next to Alaska and Texas. It is first in population and claims to be the fastest growing State in the Union.

Reliable forecasts project that the present population of some 18 million people will increase to 35 million in 1990, and 42 million in the year 2000. About one-half will be residents of Southern California. It is predicted that the population in Riverside County will increase from 506,000 in 1970 to 1,177,000 in 1990.

Should the working week be reduced to 32 hours, as predicted by many, the problems of recreation during leisure time will be further compounded. In 1963, Californians spent over 25 million days hunting and fishing. The same year in the entire nation 23 million attended NCAA football games. It is predicted that this 25 million hunting and fishing days will increase to 42 million in 1980.

California will remain the same in size, just over 100 million acres. Its rainfall will still be the same - from four inches on the desert to 15 inches in the Central Valleys and 40 to 60 in the high mountains and the humid coastal redwood forest areas. As people squeeze even closer together, they will find ways to decrease local pressures through such imaginative devices as the grandiose State Water Project, but in general the same inches of snow will cover the mountains and the same number of raindrops will fall in the deserts, as did when Jed Smith crossed the mountains of the Sierra Nevada Range in 1826.

The Bureau of Land Management has a real responsibility in the future of recreation in California. It administers approximately 16 million of California's 100 million acres. The Riverside District which includes Los Angeles has 9 million acres of Public Domain, and the Bakersfield District 4 3/4 million. Some 11 million people live, work and play in Southern California at present. So, we already have 13 3/4 million BLM acres and 11 million people. If projections are correct, by 1990 or in another 25 years, we will have twice as many people, or more, but the same 13 3/4 million acres.

There is now great pressure for recreational opportunities, and this is bound to increase. Any improvement in the way of additional developments or opportunities regardless of quality will be most welcome. Individual sites where people can get to them are now crowded all of the time.

People want to use the public lands, desert though they are, to get out of the heavily populated Los Angeles area, to avoid the smog, the congestion, the crowded freeways, and the jangling telephones. They gladly drive 200 miles for a weekend on the desert. Artists, campers, rock hunters and sun worshipers vie for the best spots. The BLM District Manager at Riverside tells of running across a happy family of sun bathers who had parked their trailer camper in a sheltered desert cove below the level of the gritty western wind. The fact that the cove was the local town dump and was surrounded by great piles of bottles, cans and trash made not the slightest difference. Here was a spot where they could hold their noses, look the other way, and enjoy the desert.

Increasing wildlife potential in the desert county is a real challange, but it can be accomplished by increasing the tempo of the already proven and successfully tested device of providing more water for the native inhabitants of the desert. In spite of the paucity of rainfall, there are still many untapped desert springs and seeps where water can be piped to lower areas to make them available to cows, quail, chukars, doves and thirsty campers. Now, many windmills pump underground water supplies to tanks for distribution through plastic 1½ inch pipelines to periodic outlets at troughs equipped with float valve controls. Some 400 miles of such pipelines have been installed in the Riverside District alone, with individual lines that extend as much as 27 miles.

A rather elaborate system of checks, controls, outlets for stock watering troughs and bird waterers has been developed. Occasionally deer and mountain sheep are benefited, but they are useful mostly for game birds. That they are effective is attested by the number of spent shotgun shells lying around the seeps and waterers.

We heard of a few "guzzlers" for quail and chukars that became ineffective because bees swarmed around them and sucked them dry before the birds could use them. Such is life on the desert!!

BLM's financial participation in this program has been largely through the use of 25% of the grazing fees set aside for range improvement and the allocation of funds by the Counties from the 50% portion which they receive. Regular appropriated Soil and Watershed funds have been used. Additional moneys from any source to expand the present program would be most helpful.

One of the most discouraging, frustrating and maddening aspects of administering public lands in California, and elsewhere, is the deliberate destruction of property by vandals. We saw on the Mojave Desert in the New York and Providence Mountain area, ample evidence of this public disease at every windmill and tank on the desert. Most of the idiots had merely shot rifle holes through the windmill blades and tails, but others were not satisfied until they smashed the gear boxes and put the desert life-giving pumps completely out of commission. They cost $400 and a month's time to replace, while precious water for livestock and wildlife senselessly ceases.

We saw one example of utterly insane destruction of public property by hoodlums. A fine cluster of board fence corrals had been built by BLM and the local ranchers for the convenience of the livestock permittees in their roundup operations. Nearby is a fine desert well, with windmill, tanks and watering troughs. The usual accumulation of empty shotgun shells once filled with dove, chukar and quail loads were scattered behind every bit of protective cover.

Vacationers, hunters, picnickers and rock hounds are welcome to use the precious water brought to the desert surface with every stroke of the pump powered by the turning blades of the windmill. Now, the blades spun in vain. A well placed high powered rifle bullet had very recently smashed the gear box. The pump was idle. Fresh tracks showed where some imbecile had circled his jeep at high speed within the

individual corrals and then deliberately smashed through the wooden fences in three different places, leaving wide gaping holes. Splintered boards were scattered as far as one hundred feet away.

I was told that present authority is lacking when it comes to penalizing such vicious, misfit and demented members of our society, if they could be caught in the act, as is extremely unlikely. Vandalism is one of the worst, most expensive and discouraging facets of public administration. BLM local officials need authority to cite offenders into civil courts to bring them before local justices. I recommend that this situation be carefully reviewed.

These watering devices have been developed on a cooperative basis. BLM has built many, livestock permittees have constructed an equal or perhaps even greater number of windmills, tanks and pipelines, while local sportsmen's associations have assisted the State Fish and Game Department and BLM in providing "guzzlers" and similar devices for game birds and animals.

The goal of increasing hunting benefits by 3% can be achieved in the Mojave Desert County by merely expanding the excellent program that is now underway. Improvements could be made by fencing small plots near watering devices to prevent trampling by livestock and permittees should be required to keep the watering systems operative all of the time rather than only when needed by livestock.

Due credit must be given to the contribution to desert wildlife by the City of Los Angeles Water Department. A great viaduct, with open cement lined ditches, mountain tunnels and 12 foot steel pipelines swallows the Owens River south of Bishop, California, and with a few

gulps at collecting reservoirs in Owens Valley, discharges to Los Angeles, some 300 miles southward, its pure mountain water collected from the snow-clad Sierra Nevada ranges bordering Owens Valley.

Under an agreement reached at the time the Aqueduct was built, taps were installed periodically for the benefit of livestock and wildlife. They provide welcome fresh water at numerous spots along its route, in an otherwise dry desert. The usual telltale sign of spent shotgun shells testifies to use by chukars and quail. Also, the pock marks in the thick, tough steel walls of the viaduct pipeline show that the imbecile vandals do not confine their destructive talents to windmills and signs alone.

OWENS VALLEY TULE ELK

Difference of opinion continue as they have for more than 30 years about the introduction and management of the Tule elk herd in Owens Valley. A recent appeal by the "Committee for the Preservation of the Tule Elk" asks national support to "Help Save this Beautiful Animal from Extinction." On their Advisory Board they have listed some very prominent nationally known conservationists. According to this statement the U. S. Fish and Wildlife Service includes the Tule Elk as "head of their list of the nation's threatened mammals." The International Union for the Conservation of Nature is claimed to be "adding the Tule Elk to its list of the world's rare or threatened species." The brochure issued by the Committee in January 1965 begins with this statement: "Another year begins full of challenge, work, and progress toward the preservation of the Tule Elk and other beleaguered wildlife, with the grim realization that time is running out." It

ends with a plea for new members with dues ranging from $1 to $50 each.

I have checked with the U. S. Executive Director of World Wildlife Fund who informs me that the Tule Elk are not on their list and are not currently considered in any danger, or "threatened" although more animals would be welcome.

The Chairman of the committee studying rare and endangered species in the U. S. Fish and Wildlife Service tells us that the Tule Elk are on the "rare" list because of the fact that their total numbers are probably less than 500 animals, but that they are not considered an "endangered." Disease or other unforseen circumstances could change this picture.

The Tule Elk, like its relatives, the Roosevelt elk and the Rocky Mountain elk, is an animal that creates controversy when and wherever it comes in contact with agricultural pursuits. Unlike deer and antelope, their diet consists largely of the same forage as cattle. They particularly like growing barley, oats, potatoes, corn, timothy, red top, and alfalfa if they can reach them.

Young orchard trees or trees in a forest plantation can be severely damaged. Damage to conifer regeneration is perhaps the area of most severe conflict. A study of several private tree farm activities in California reveals approximately 50 per cent of the young redwoods and 25 percent of the fir seedlings destroyed. These observations do not apply to the Owens Valley elk herd - but they do illustrate the point that elk can be very incompatible to an agricultural society.

They are aggressive and only the strongest fences will stop them. At the Jackson Hole National Elk preserve in Wyoming, I have

personally seen them chase ranch hands off the sleds loaded with hay being pitched off for them, while they clambered on and began feeding. Introductions of Rocky Mountain elk into Virginia, Pennsylvania and elsewhere throughout their early American original range have experienced similar conflicts. Elk, farmers and ranchers simply do not mix without trouble.

It was this basic trait that started the Owens Valley Tule Elk problem in the first place. Originally, this animal described in 1904 as a distinct subspecies by Dr. C. Hart Merriam, early chief of the U. S. Biological Survey, occupied the marshy central valleys of California by the thousands. By 1914, only a single herd of some 400 individuals remained on the Buttonwood Ranch of Miller and Lux in Kern County. This led to efforts by the Biological Survey and the California Academy of Sciences to distribute this unique subspecies to suitable ranges elsewhere.

The ancestors of the present Owens Valley herd went first from the Miller and Lux ranches to Yosemite National Park in 1920 but they were found unsuitable there as more and more visitors crowded the Park. Later, enthusiastic Owens Valley sportsmen conceived the idea that the extensive City of Los Angeles holdings in the Valley floor would be an ideal spot for a permanent Tule Elk herd. After consent was obtained from willing Los Angeles officials, and with full cooperation of State Fish and Game, Park Service and Biological Survey officials, the transplant from Yosemite Park was made, beginning in the evening of October 9, 1933. Twenty-seven elk, seven bulls, three yearlings, eleven cows and six calves arrived at a temporary holding pasture "on the Owens River near Aberdeen,

which is 14½ miles northeast of Independence, Inyo County. The new home of the elk seems to be ideal, plenty of water, abundance of willow, tule, undergrowth and grass. Most of the area belongs to the City of Los Angeles, and is used only for watershed protection and cattle grazing. There are a few private ranches left in the Valley. If the elk take to these ranches, there will be difficulty." (Report by Asst. Park Naturalist A. E. Borell, October 1933.)

Since then, the Owens Valley herd has prospered and is now held down to approximately 300 head. They differ from the Rocky Mountain elk in their basic habits. Instead of moving into the high mountains during the calving season and for summer forage in mountain meadows, they remain year long in Owens Valley. They have spread out over the entire length of the Valley from south of Lone Pine, where the movie stunt men use the spectacular red Alabama Hills as a back drop, to a mile or more north of Bishop.

The elk appear to have assorted themselves into five separate groups. These are known among the biologists as, reading from south to north, the Lone Pine, Independence, Goodale, Tinemaha, and Bishop herds. The Tule Elk herds are quite sedentary in nature, but have recently left the Valley floor and are using the foothills to a greater degree. We heard a report of a small group that had moved across the Inyo National Forest eastward and were seen near Deep Springs. We suspect that if they were left to their own devices, they would find ways to overcome population pressures.

The Bureau of Land Management has a real responsibility in the management of the Tule Elk herds in Owens Valley. They use about 200,000 acres of land for their pastures, of which BLM owns 22%. The Inyo National Forest 28%, the City of Los Angeles 49%, and other private holdings 1%. While BLM has no control over the size of the herd, it is definitely responsible for the condition of more than 42,000 BLM acres of range used by the elk, deer and bighorn sheep, about twenty-five cattle ranchers, and fourteen established pack outfits who winter their horses in the Valley. Overuse of the range by any or all of these interests is a violation of the public trust placed in the land administering agencies. The Forest Service very recently cancelled a permit for grazing 300 cattle AUM's on the Inyo National Forest for the benefit of elk, an act which is still drawing loud complaints from the permittee.

The Fish and Game Commission, which has sole authority for managing the numbers of game animals in California, on January 27, 1961, adopted a management plan, the objective of which is to "preserve the Owens Valley elk herd in a safe and thrifty condition." The animals are counted at least once a year. The herd is maintained at between 250 and 300, and when reduction is accomplished, it is on a cull basis. Hunters are permitted to shoot selected animals, mostly old, when accompanied by a regular Department employee who designates those to be taken. Applicants for permits must first demonstrate good markmanship and safe handling of firearms. Fish and Game employees are permitted to carry guns to dispatch any wounded animals.

In 1943, the Fish and Game Department authorized a hunt in which 43 bulls were removed. Analysis of stomach contents showed 48% contained cultivated oats and alfalfa. Another hunt was conducted in 1949, when 61 males and 46 females were removed. In 1955, a third hunt removed 40 bulls and 104 cows from the herd estimated at 301. In 1961 and 1962, 32 males and 67 females were killed. In 1964 50 permits removed 25 cows and 25 bulls so that since 1943, in six special hunts, a total of 444 elk have been taken from the Owens Valley herds by licensed sportsmen.

It appears to me that the various land management agencies, in cooperation with the California Division of Fish and Game have done a pretty good job in managing the Owens Valley Tule Elk herds.

One can well question whether the top figure of 300 elk is sufficient, considering the unique character of the animals. I inquired and was told that Owens Valley grazes between 10,000 and 15,000 cattle per year. Three hundred elk in a 200,000 acre area of BLM, Forest Service and City of Los Angeles range land appears to give the stockmen a very liberal break. Doubling the size of the herd would hurt the economy of the Valley little, and would better insure the future of this unique animal. It has long been recognized by biologists that there is danger to the preservation of basic characteristics of an animal population when their numbers become too low. A total of 750 instead of 300 would be better.

The four agencies that met in September 1965 plan to meet again early in 1966 to discuss further action. The McCullough report should then be available. BLM wildlife staff members have the Owens Valley Elk herd high on their priority list.

My appraisal is that:

1. The Bureau of Land Management, the Forest Service, the City of Los Angeles, and the California State Fish and Game Department - all are doing a good job in managing the Owens Valley Tule Elk herds.

2. The size of the herds should be increased, but that they are not presently endangered with the threat of "extinction."

3. With their sedentary nature, they could become a management problem. In Yellowstone Park, rangers had to kill some 5,000 animals in 1961 to discourage further severe damage to the elk's natural environment. Elk "ghettos" are not at all uncommon in the field of wildlife management.

4. The Tule Elk of California are unique. They must be preserved as an important part of our North Americana fauna; but

5. While they are rare they are not endangered under present plans of management.

I asked J. Clark Salyer II, the nationally known and highly respected long time Chief of the Branch of Wildlife Refuges of the Bureau of Sport Fisheries and Wildlife to review the above. His comments are:

> I much enjoyed discussing your California report with you last week. As I told you, I like its over-all import. Again, I want to stress, however, the desirability of recommending a larger Tule Elk herd for Owens Valley. From the standpoint of proper

The land management agencies are acutely aware of the Tule Elk situation. The Inyo National Forest, with headquarters at Bishop, California, has reserved 38,000 acres in the Goodale and Saw Mill areas strictly for the elk. They took a substantial step in developing a total management plan with their excellent report "Tule Elk Management Plan, 1965" in which the Department of Fish and Game and BLM cooperated.

Further plans need to be made. The Forest Service report concentrates largely on the Goodale herd. The total population should be considered and more detailed management plans developed. The City of Los Angeles which owns about one-half of the elk range, must continue to be made a part of any management plan.

On September 21, 1965, the Bakersfield District Office of BLM called a meeting of the California Department of Fish and Game, the U. S. Forest Service, and the Los Angeles Department of Water and Power to discuss an overall elk management plan for Owens Valley. All four agencies are opposed to any "elk refuge" as proposed by the Committee for the Preservation of the Tule Elk. The agencies, in general, feel that the best management of all the natural resources in this area should continue under the principles of multiple use and that the Tule elk can be properly managed by the present land management agencies along with the all important Division of Fish and Game.

A two year field study has just been completed by Mr. Dale R. McCullough, a graduate student seeking a Ph.D. degree under supervision of Dr. A. Starker Leopold. Field work has been completed and his report should be available early in 1966.

distribution of the several age groups required to maintain a vigorous herd, there is also the problem of preserving a wider distribution of the survival genes so necessary in any animal species. Thus, the herd numbers should average around 750 animals, including all age groups. After achieving this number, you could shoot around 200 animals a year. Thus, the Tule Elk would become an important game animal in California and bring in considerable revenue to the State Game Department. The time to get the idea across as to numbers and economic importance of the species is now before the various cooperating agencies get trapped into the 300 animal limit now being considered.

The working agreement toward which the Bureau of Land Management, the Forest Service, the Metropolitan Water District of Southern California, and the State Game Department are now moving seems a very practical solution to the problem. However, to actually guarantee the future of the Tule Elk under the management of so many cooperating agencies, it seems most desirable that a Tule Elk Management Compact be worked out between the four cooperating members and be signed and publicized. The compact would somewhat resemble the various State Water Compacts with which you are familiar. Thus, the responsibility of each agency and their over-all and continuing contribution toward the management of the elk herd would be set forth in the compact.

If you would get such a pioneering wildlife compact across in this strategic case, you would originate a new and much needed form of agreement among conservation agencies. I believe it would be adopted and applied to a number of western big game herds whose yearly life cycle covers movements into parts of several States. Such a compact, if arrived at, would satisfy the desires of many conservation agencies and individuals who have long pressed for a Tule Elk Refuge in Owens Valley.

I strongly urge that his recommendations be given every consideration when the responsible agencies meet again on this thorny problem.

COSUMNES RIVER PROJECT

The question surrounding the Cosumnes River project is one of basic BLM policy. It is whether this agency should actively enter the field of managing public recreation on its public lands - or continue to look to other State and Federal agencies to do that job.

The Cosumnes River heads in the high Sierras east of Sacramento and empties into the Sacramento River about 25 miles south of the Capitol city. It drains a large area of low value agricultural valley floor lands and is scheduled to become a part of the Bureau of Reclamation's Central Valley water control plan by the building of a dam about 20 miles upstream from Sloughhouse.

In the process, the Bureau will flood and destroy certain habitat for fish and wildlife above the impoundment, and under terms of the Coordination Act will acquire other lands which will be dedicated to fish and wildlife use as mitigation for these losses.

BLM has rather extensive scattered holdings interspersed with present private lands bordering the impoundment area. Because of the access problem, the private lands can block entrance to the public properties and present effective use by the public

As is customary, the Bureau of Reclamation proposes to turn over to another Federal or State agency the management of the lands which will be used for recreation purposes. The Fish and Wildlife Service, the National Park Service and State Fish and Game agencies have assumed this responsibility in many other areas. Because of the large holdings of lands by BLM in the Cosumnes area, the question has been raised as to whether this Federal agency might best assume responsibility for administering recreation.

The Fish and Wildlife Service coordinates matters of this sort through its River Basin organization. The Service reports:

"It has been generally agreed that the Bureau of Land Management could best administer the fish and wildlife mitigation and enhancement lands to be acquired outside National Forest boundaries in conjunction with the Cosumnes River division, Central Valley projects, California. Representatives of the California Department of Fish and Game, the Bureau of Reclamation, Bureau of Land Management and Bureau of Sport Fisheries and Wildlife are working toward agreement with county representatives on the lands that will ultimately be recommended to fulfill the fish and wildlife requirements of the Cosumnes River Division."

The Fish and Wildlife Service recommends that the Bureau of Land Management assume responsibility for the administration of recreation here. The California Department of Fish and Game endorses the proposal with certain provisos dealing with areas "involving very intensified management of fish and wildlife."

The principal question for BLM is to decide whether the Bureau wishes to accept this responsibility. The Regional Solicitor for the Department advises that under the new laws there is ample legal authority to do so.

Here is a place where the Bureau could emphasize its interest in recreation by accepting and advertising its administration of the total area, recreation-wise. It already owns a large share of the lands interspersed throughout the project.

I recommend that it do so.

CALIFORNIA STATE WATER PROJECT

The 1965 report on progress of the California State Water Project contains some fantastic information and asserts that California is "constructing the largest single integrated water development and transportation project ever yet known to man."

California's population during the past 25 years has soared from 6,900,000 to around 18,700,000. In the next 25 years it is projected to reach 35,300,000 and 54,000,000 by year 2020.

Present water consumption is about 31 million acre feet every day which must be increased 10 million by 1995 if population trend projections are correct.

So, in typical forward looking and imaginative fashion, the huge $2,000,000,000 (that means 2 billion) project came into being as a State financed and State operated plan, one of the largest public works projects ever conceived. It takes water from the headwaters of the Feather River northeast of the capitol city of Sacramento, and with viaducts, tunnels, pumping stations and power plants, delivers Sierra Nevada mountain water for thirsty residents and arid lands for a distance of 444 miles south. Its end is in four terminal reservoirs, the principal one, Perris, being south of the Tehachapi Mountains near Riverside. This is in the center of the already congested but still growing Los Angeles, southern California complex.

Oroville Dam, the principal collecting basin in the upper reaches of the Feather River drainage, is scheduled for completion in 1967. It will be the world's highest zoned earth embankment - 770 feet. The Washington Monument is 555 feet high.

Bill Warne, the very able Director who has previously held important positions at the International, National and State levels, calls the California program "the greatest water project of all time." Further: "For the first time in history, in my belief a great water project has been designed with full consideration for all conservation objectives. As much as 10 percent of the very large cost of the project will be assigned to recreation and fish and wildlife enhancement. This $200,000,000 more or less comprises the cost of the specific facilities for recreation, fish and wildlife and the share of dam and reservoir costs allocated to these purposes.

"The State Water Project is a two billion dollar undertaking by the State of California and one of the largest public works projects ever conceived."

"It covers more than half the length of California. About two-thirds of California's population lives within service areas."

BLM has scattered holdings throughout the project area, which are being incorporated into the overall master plan. Perhaps further enhancement can follow as the total program progresses. We were hopeful that there might be a surplus which chould be used for wildlife on the Mojave Desert area, but inquiry revealed little such possibility.

TRAINED PERSONNEL

Wherever I visisted in California, as elsewhere, there was evident a crying need for more people trained in the fish, wildlife and recreation field. The 3% or more increase desired in the use of BLM lands can be easily met by improved administration at the District,

State and National levels. Manpower is needed to develop programs which will improve water distribution on the Mojave Desert, to improve deer habitat along the borders of the Central Valleys by brush manipulation, spraying, planting to vetch, browse and other grasses, locate and develop springs, plan impoundments and a score of other beneficial activities which would aid wildlife on the public lands.

Here is a simple illustration which typifies the frustration felt by most BLM employees in the fish and game field. Jim Garner, the Chief of the Division of Resource Management in the Bakersfield office, presented this thumbnail sketch:

The District administers 4,750,000 acres of public land.

It lies directly north of Los Angeles, where steady streams of people pour out every weekend.

It includes 40% of the people in California.

It includes 20% of all of the people in the 11 Western States.

The District is 300 miles long and 300 miles wide.

Travel is difficult and time-consuming.

The District has one man part-time on recreation, one man part-time on fish and wildlife.

He needs a full-time civil engineer to lay out camp grounds, access roads and water developments.

Coordination must be maintained with:

4 National Forests

12 Forest Service Ranger Districts

3 Department of Fish and Game Regions

6 Unit Fish and Game Managers

California Division of Forestry on fire prevention and suppression.

25 Soil Conservation Districts

9 County Planning Commissions

2 Forest Service Recreation Specialists, Inyo and several other National Forests

Cattle and Sheep Associations

Range Improvement and Brush Control Associations

Others

More manpower is needed just to coordinate BLM programs with these other groups. The basic Bureau responsibilities such as routine checking of grazing, mining, recreation, occupancy, trespass, and other land use permits now suffer. Field staff complain that they cannot adequately do their day by day jobs now, let alone planning for future needs.

BLM lacks manpower to hold down trespass. A permit may be issued for 300 head of stock and no one but the permittee knows whether 500 or 600 head are using the allotment. Some violations run up to 30%.

Sportsmen and Fish and Game officials complain that private lands illegally block access to public lands. Yet BLM lacks personnel to investigate even the reports.

The main need in California, as elsewhere, is for more manpower to improve administration of what BLM now has, and to do a better job of what the Bureau is now doing. There is nothing wrong with the program but inadequacy.

Garner says: "We are barely driving stakes ahead of the bulldozer."

Someone during my survey well said: "If the Director told us tomorrow that five million dollars were available, we wouldn't know what to do with them unless we could hire more trained personnel to help us. Money doesn't get the job done. Men do."

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IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

MAR 4 1966

Mr. Charles H. Stoddard, Director,
Bureau of Land Management
Department of the Interior
Washington, D. C.

Dear Director Stoddard:

The following photographs illustrate some of the points and conclusions reached in my recent survey of means and methods of enhancing fish, wildlife and other recreational aspects of the vast and important public lands under your administration.

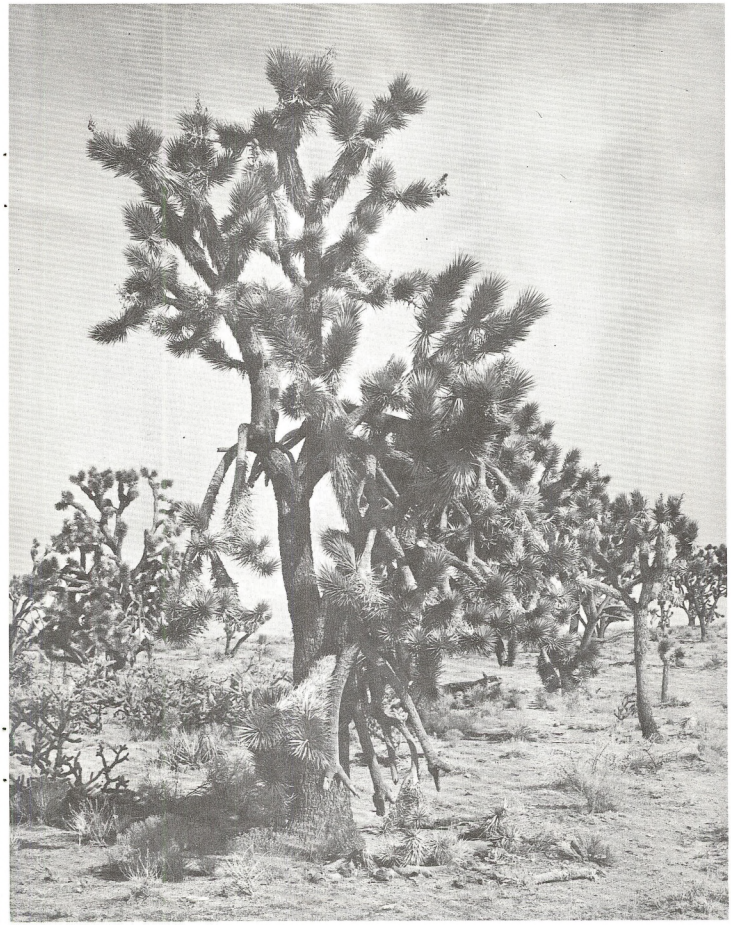
Your approach to the implementation of the recent Multiple Use and Classification Act is appreciated by Conservationists everywhere. I hope that this report will assist your efforts.

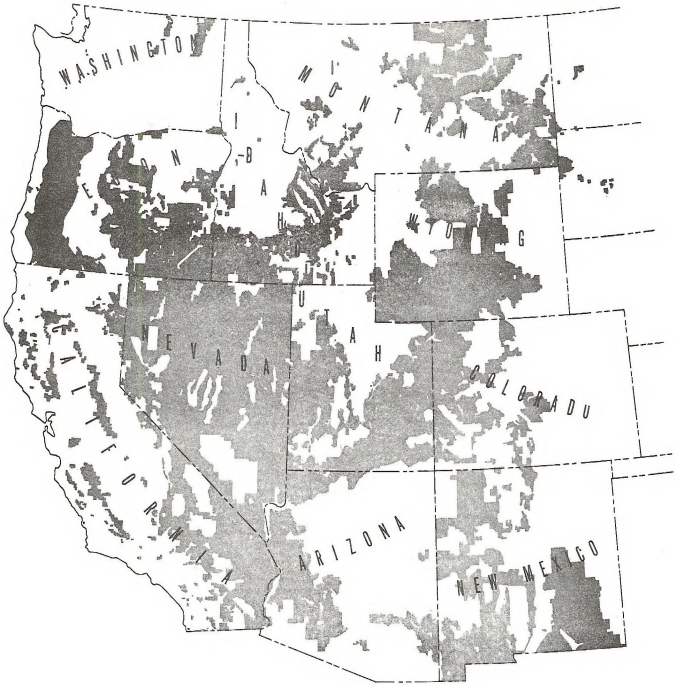
All photographs were taken by the author unless otherwise credited.

Sincerely yours,

Albert M. Day

Albert M. Day
Recreation Specialist.





PUBLIC LANDS IN THE WESTERN STATES

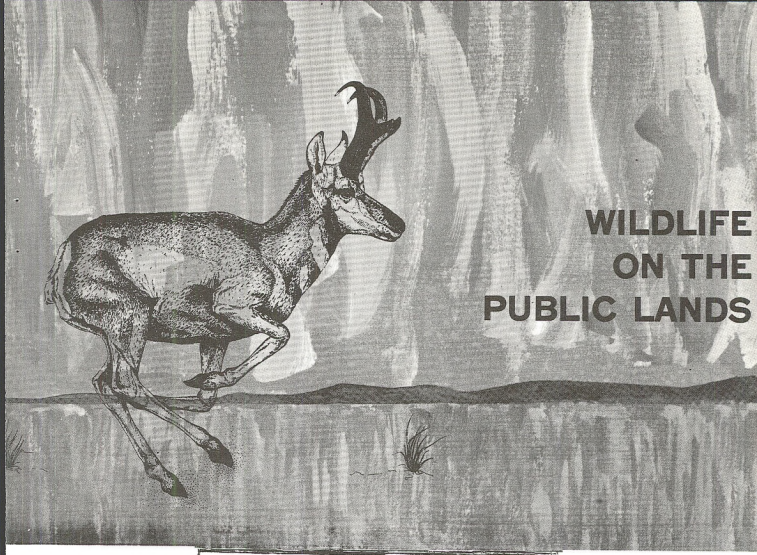
Legend

October 1964

PUBLIC LANDS MANAGED BY BLM

United States Department of the Interior

Bureau of Land Management



WILDLIFE ON THE PUBLIC LANDS

You own part of America — not only her institutions, her history and her hopes, but a share in her vast public lands. The national parks, monuments and forests, the national recreation areas, wildlife refuges, the national seashores and the federal public domain lands are yours.

Your stake in each category of public lands is high. They are the source-lands for many of America's river systems, her water supply. They are your playgrounds; they play host to the angler, the camper, the sightseer and, in places, the hunter, the mountain climber, skier and rockhound. From their forests, foothills, prairies and deserts come beef, wool, lumber, oil, minerals and metals.

Nearly one-third of this national heritage, or 464 million acres, is known simply as "the public lands." They are western lands remaining after more than a century of selection and withdrawal. President Kennedy referred to them as a "vital national reserve" because their resources — ranging from oil, protein and wood to awe-inspiring vistas, trout streams and public hunting grounds — are vital to the Nation, both socially and economically.

MONTANA

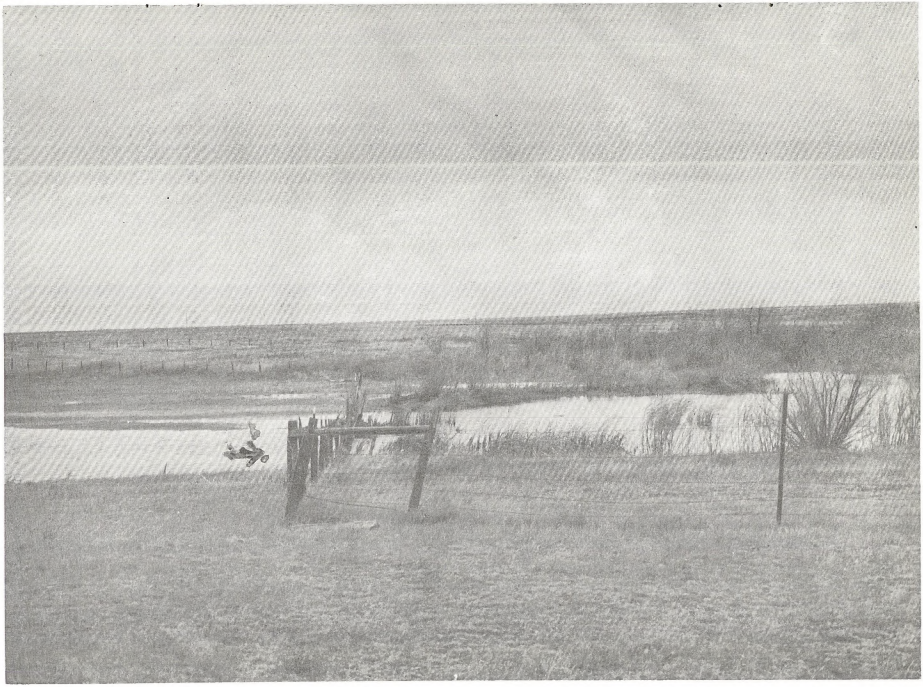
Stock watering impoundment near Roundup, Montana. BLM has constructed around 2600 since 1936, ranging from a few to several hundred acres. An equal number is estimated to have been built on private holdings.

A typical livestock watering dugout in a severely overgrazed private pasture. This dugout has no plant life whatsoever, while crustaceans, etc. are extremely rare. Slight value to waterfowl.

Photo S.D. Fish and Game Department.

View from top of 87-acre Mitchell impoundment dam near Malta, Montana. Five-acre seep area below was fenced and protected for wildlife use at least 20 years ago. Photo A. H. Majors

Airplane view looking south across Willie Doll reservoir on public lands about 20 miles southwest of Malta, Montana. Lines mark approximate location of fences constructed in 1942 by Montana Fish and Game Dept. to exclude livestock from about 100 acres at upper end of 390-acre impoundment area.



Southwest corner, fenced area Willie Doll permit at location marked by arrow on above aerial photo. Heavy livestock use in foreground leaves ground almost bare while excellent stand protective marsh vegetation surrounds water inside enclosure.

Heavy cover of grass and forbs inside fence, little grass but much cactus outside. East boundary, Willie Doll enclosure.

A. K. Majors of BLM and Dick Trueblood of Mont. Fish and Game Dept. inspect lush stand of grass and forbs within Willie Doll enclosure near Malta, Mont. A wide variety of ducks and 50 to 100 geese nest on this area.

Planting of trees along embankments, stream edges and recreational areas protects soil, holds winter snows, aids wildlife and beautifies the landscape. Wide variety has been found suitable to Montana's prairie country since Shelterbelt days.

Range plants respond to protection. This photo was taken at south boundary of Bowdoin Federal Wildlife Refuge, Malta, Mont. Private, heavily overgrazed lands lie across the fence.

This picture was taken looking south from a small bridge across a ditch which drains water from a badly overgrazed private ranch into Bowdoin Nat'l Wildlife Refuge near Malta, Mont.

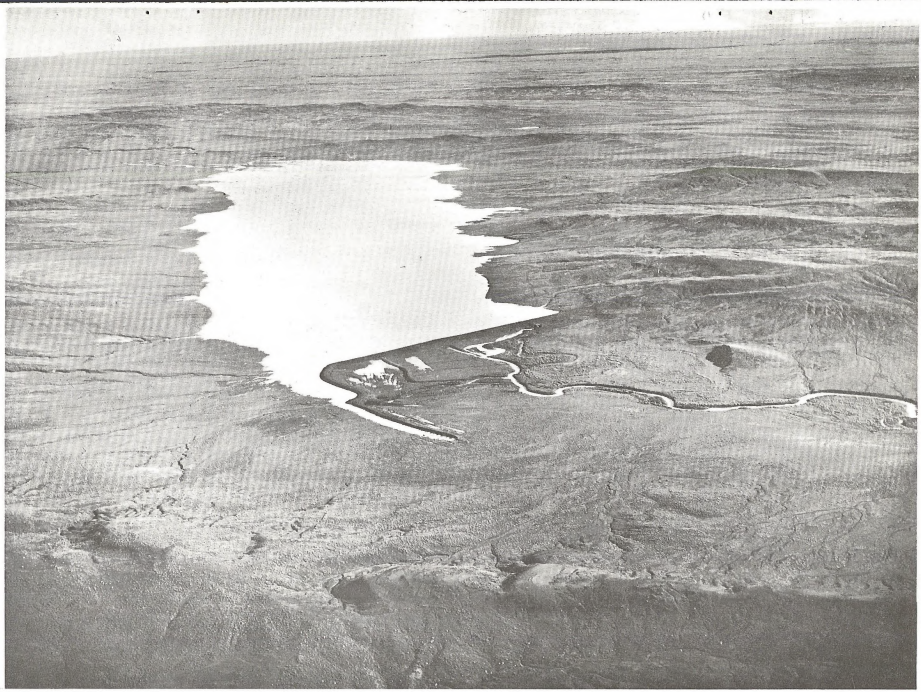
This picture taken same time, same spot from same bridge, but looking north into Bowdoin Refuge. It demonstrates results of judicious grazing practices, plus water level controls and management for production of large annual number and variety of waterfowl and marsh-loving wildlife.

This picture taken from same bridge, same spot, same time, looking east along south boundary fence of Bowdoin Wildlife Refuge. Cows and ducks get along fine together when management is regulated for both. Note contrast in ground cover across boundary fence.

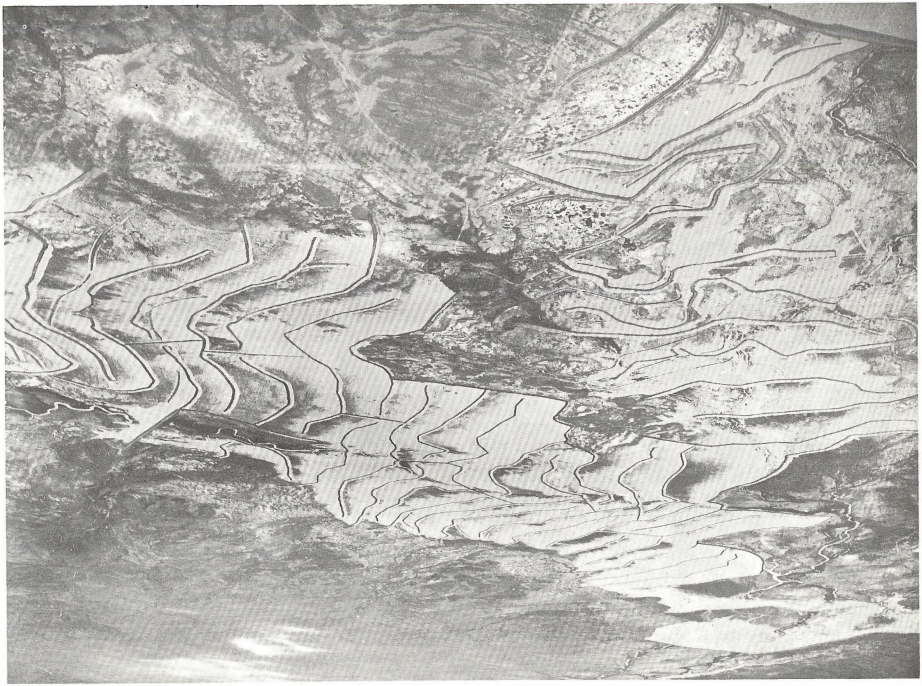
Antelope have responded to management and protection beyond the fondest dreams of biologists a short forty years ago. Bowdoin Nat'l Wildlife Refuge, Malta, Mont.

Sage grouse at edge of fenced cattle exclosure. BLM Photo.

Reservoirs with irregular shore lines, peninsulas and islands are ideal for waterfowl. They should be fenced and protected from grazing until after the nesting season. This area lies southeast of Malta, Montana.



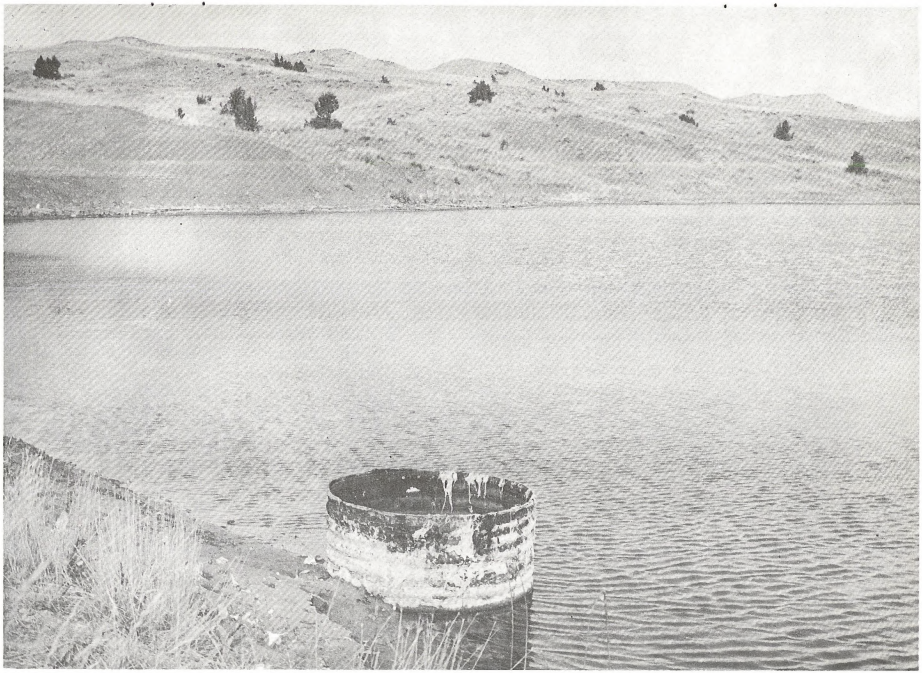
An excellent type of BLM reservoir that might be fenced and its edges protected from grazing until after the waterfowl nesting season. BLM Photo by Johnston.



BLM water spreading dikes. All or part of this 600 acre flood control device would be highly beneficial to nesting waterfowl if fenced and livestock grazing were restricted to late summer and winter. BLM Photo by Johnston.

Water spreading dikes would create excellent waterfowl habitat if fenced and protected from livestock use until September 1. BLM Photo.

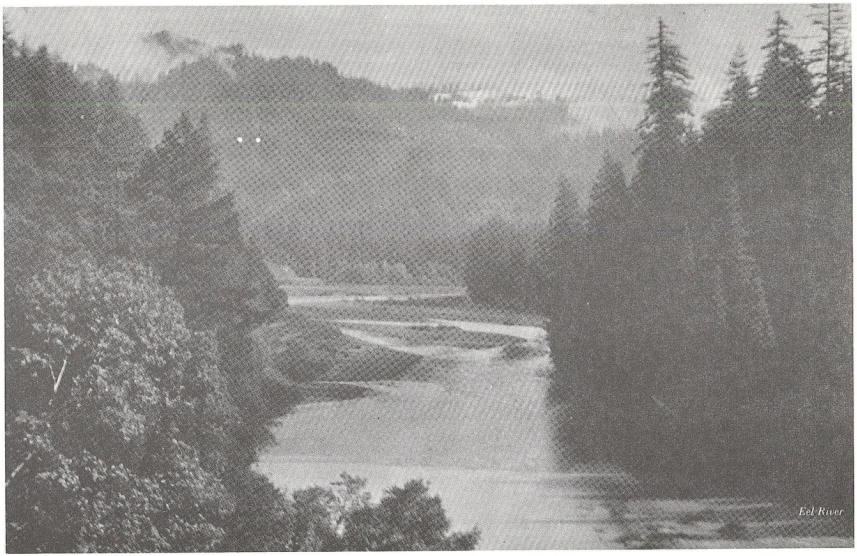
Erosion of dikes is a constant maintenance problem. Fencing to avoid livestock damage and edge planting with willows, bulrushes, and aquatic plants reduce such loss. It also helps fish and wildlife. BLM Photo.



Standard 30-inch culvert type drain through a BLM dam in Cedar Creek Area, Miles City District.

Outlet below dam. Cedar Creek Area, Miles City District. This program deserves critical review.

There is excellent cooperation between personnel of the Bureau of Land Management and Montana Fish and Game Commission. Many more developments such as this one near Miles City, Montana are needed.

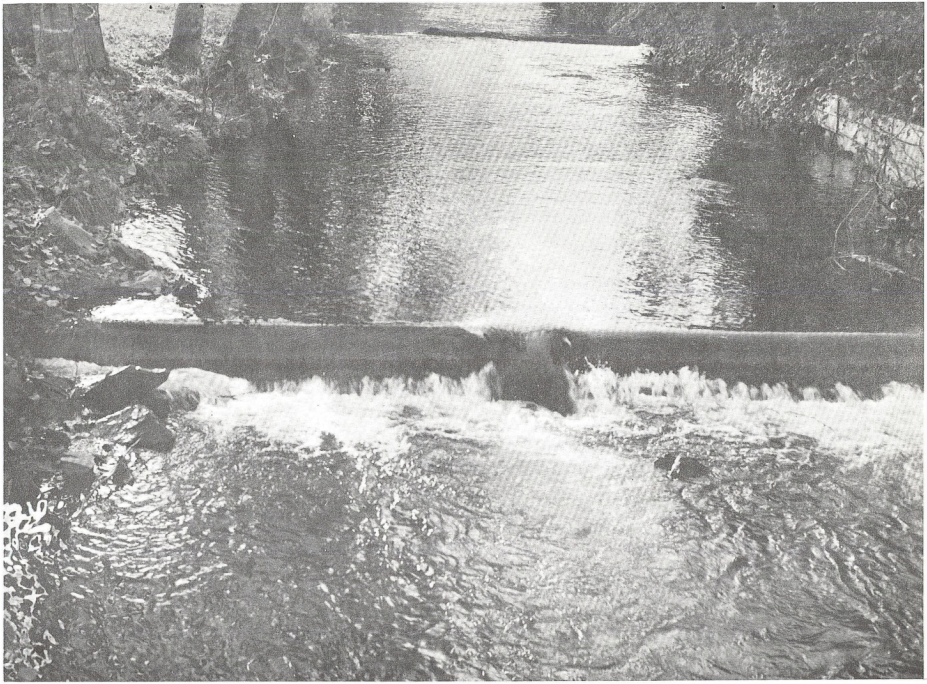


O R E G O N

A typical Pacific Coast stream. BLM administers almost 2,400,000 acres of valuable timber producing O and C lands in Oregon. Streams such as these are the home of Chinook and Silver salmon, Steelhead and Rainbow trout, Shad and other species of fish. They are nurseries for both sport and commercial fisheries.

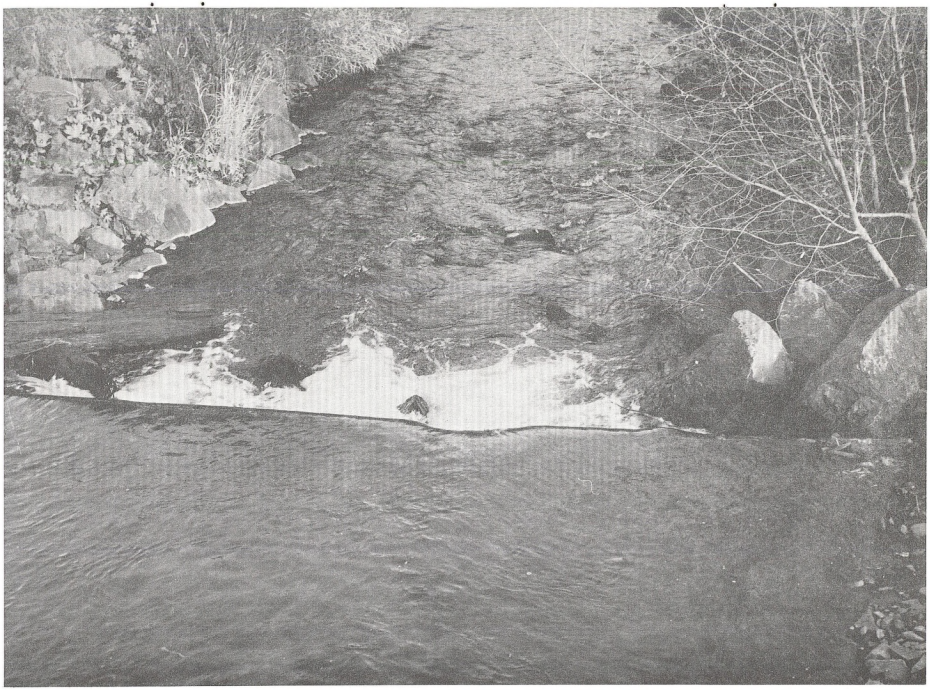
Much can be done to create favorable spawning, hatching and rearing conditions for salmon, steelhead and rainbow trout. This was condition of Plympton Creek, a tributary of the Columbia River before improvement. O.F.C. Photo.

Log baffles installed by Oregon Fish Commission create gravel spawning beds above and deep resting and feeding pools below. O.F.C. Photo.

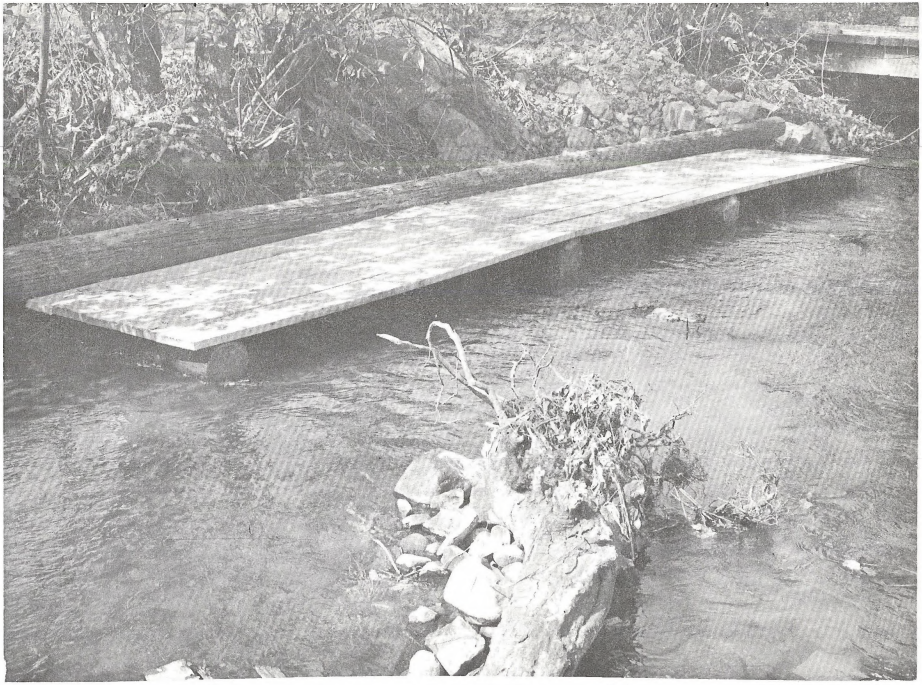


Gravel beds above the 27 installations in 5-mile long Plympton Creek provided nest locations for about 400 Chinook salmon plus equal number Silvers in 1965.

During low summer stream flow, deep pools created by log dams provide suitable fish habitat. Slot provides easy passage during migration. O.F.C. Photo.



Thirty-five large Chinook salmon were netted in this hole during low water stage of Plympton Creek during census in late summer 1965.



Shelter constructed over deep hole for salmon on Plympton Creek, Oregon. All of the log stream improvements held firm in unusually heavy spring flood of 1964, while bridge in background was washed away. O.F.C. Photo.

Cedar Creek, tributary of Siletz River after flood of Dec. 1964. Sights like this are all too common on Oregon coastal streams. Improved logging practices alone can cure this blight. Heavy winter and spring rains will continue, as they have for centuries, to sweep hillside debris into the bottoms. O.F.C. Photo.

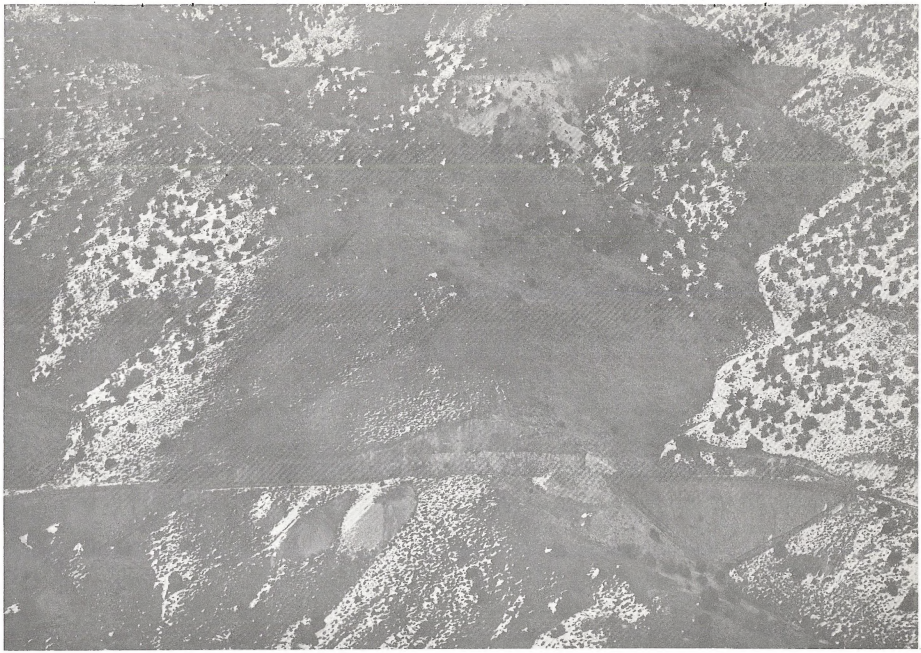
Cedar Creek was later cleared so salmon and steelhead might again reach the upper spawning gravels. As usual, the public pays the bill for cleaning up the mess. In this case, it was the Oregon Fish Commission. All Federal and State land agencies clear streams, a constant chore. O.F.C. Photo.

N E V A D A

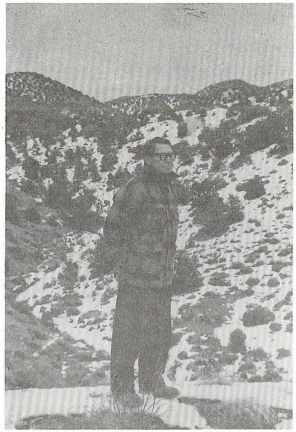
Boundary Peak, Nevada's highest, and Montgomery Peak in California, still higher, collect moisture which flows year-long into Queens Valley. Charlie Smith pipes it to his Hereford Ranch for domestic and irrigation use, but has surplus to turn over to BLM for recreation development. Smith Photo.

In 1898, the S.P. Railroad built a 300-mile narrow-gauge line to haul potash from alkali beds in Owens Valley, Cal. across Montgomery Pass to gold smelters at Tonopah, Nev. Long abandoned, a series of earthen fills facing Queen Valley make intriguing possibility of wonderful fishing lake and recreational project on BLM lands in Nevada's high desert country. This picture shows one fill and, in distant background, Smith Ranch below fog-shrouded Boundary and Montgomery Peaks.

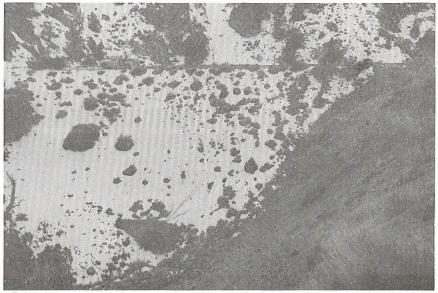
Charlie Smith and his associate Harry Hodgetts stand on 72-ft. deep railroad fill that would create 20-acre lake behind them if tentative plans materialize. Series of five such lakes would provide cold and warm water fishing. Fine location for camping facilities for thousands of recreationists nearby.



Four of the ancient S.P. Railroad fills are shown in above aerial photo. All are approximately 70 feet deep, and if plugged with suitable valves and filled with water piped from the mountains across Queen Valley, would create fishing lakes ranging from 8 to 20 surface acres each. Old roadbed connects all lake sites and provides access and exits to project. All on BLM land.



O.B. Howell, BLM Recreation Specialist
atop 70-ft. fill which could create marvelous
fishing lake.



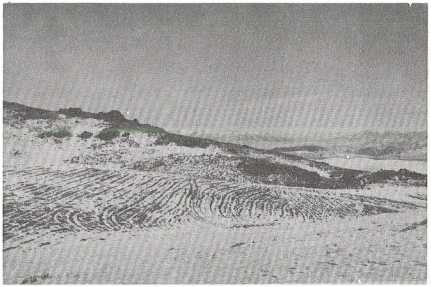
Stone masonry, 12-ft. culvert, built by
Chinese coolie work crews in late 1800's
now drains area above the railroad fill.

Impoundments are already in place, impacted by thousands of train loads of alkalis hauled from Owens Lake, Cal. to Tomopah, Nev. between 1898 and 1925. They have been weathered by nature ever since and appear to provide excellent dam foundations. Broken lines follow old railway grade.

The dry and windy summer of 1964 brought disaster to the range country of eastern Nevada. Thirty lightning fires burned at one time. The largest single fire came from a careless silver mine trash dump.

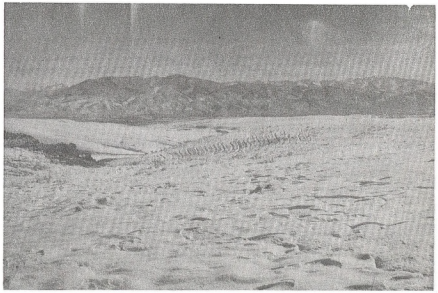
Three hundred thousand (300,000) acres were devastated, despite Herculean effort by BLM personnel and many others.

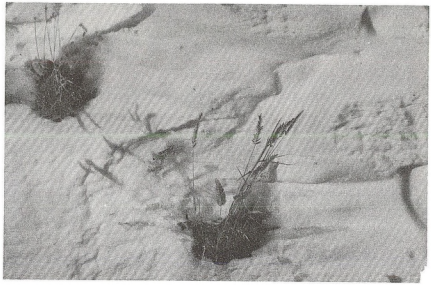
These pictures were taken from air in Dec. 1965 after light snow. Burned areas show white. Dark areas which escaped the fire are still vegetated and appear dark.



Areas burned in 1964 were given a massive restoration treatment by BLM in 1965. Furrowing, scarafying, plowing, seeding, dragging, protection from grazing by drift fences were combined in a huge program of rehabilitation.

Since the 1964 range fires, there have been by BLM, 6,000 acres plowed and seeded to crested wheat grass, 2,875 acres planted with bitterbrush, 67,000 acres scarafied and seeded with crested wheat grass, 11,000 acres seeded from air, 15,000 acres ripped for seeding in contour pattern, 150 miles of drift fences installed to protect restoration efforts.

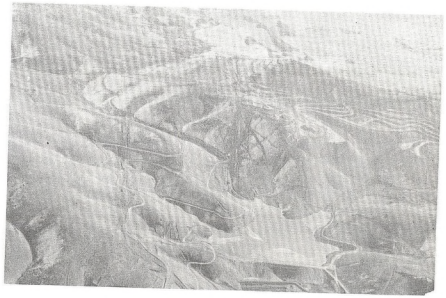




Crested wheat grass, an exotic introduced from the steppes of Siberia, is a valuable plant for range rehabilitation. Is seeded by airplane on scarafied land surface.

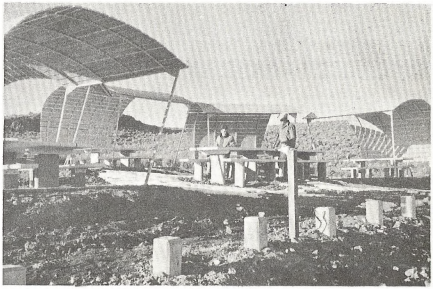
Bitterbrush, an important wildlife food plant is doing exceptionally well after seeding in prepared areas on BLM lands, Elko District.

Open pit copper mine near Midas, Nevada. Carlin Copper Mining Co.

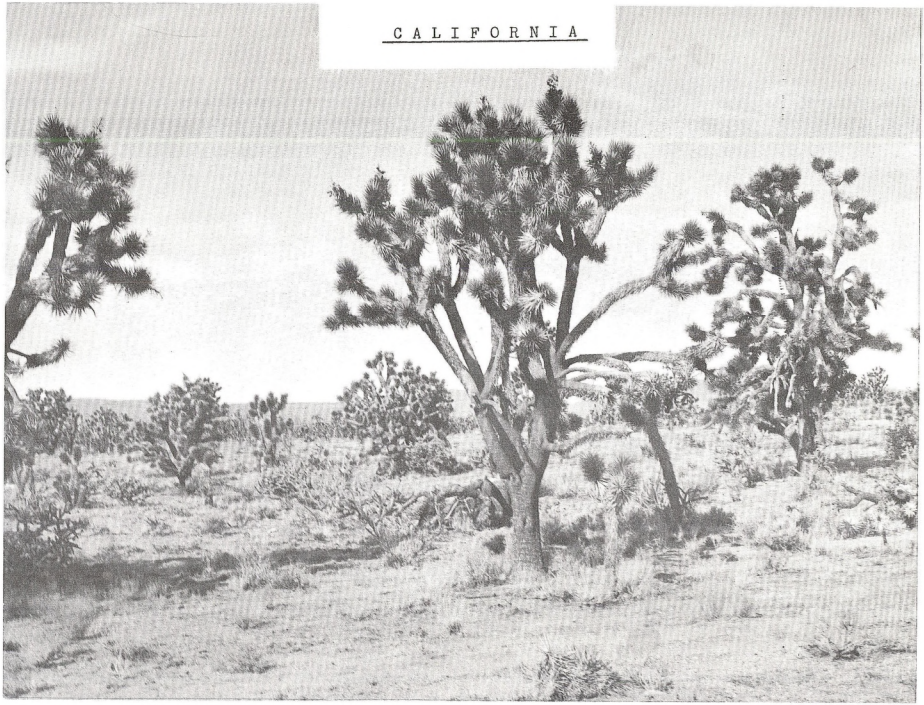


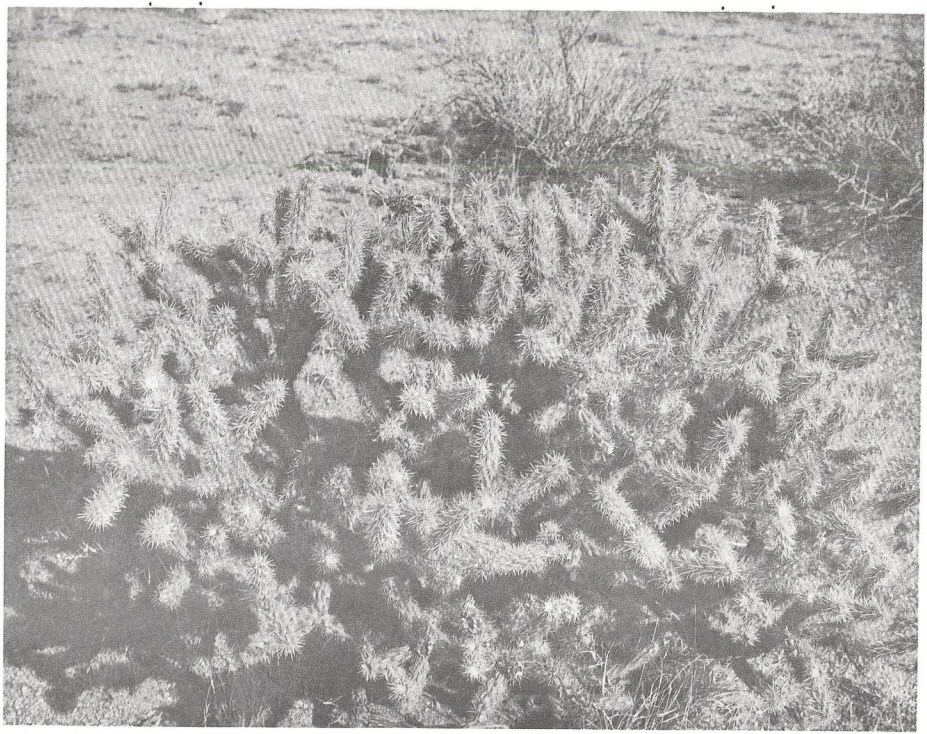
New and as yet unused public recreational facilities built by BLM near Wild Horse Reservoir, Elko District. Expect large number of users during spring and summer months.

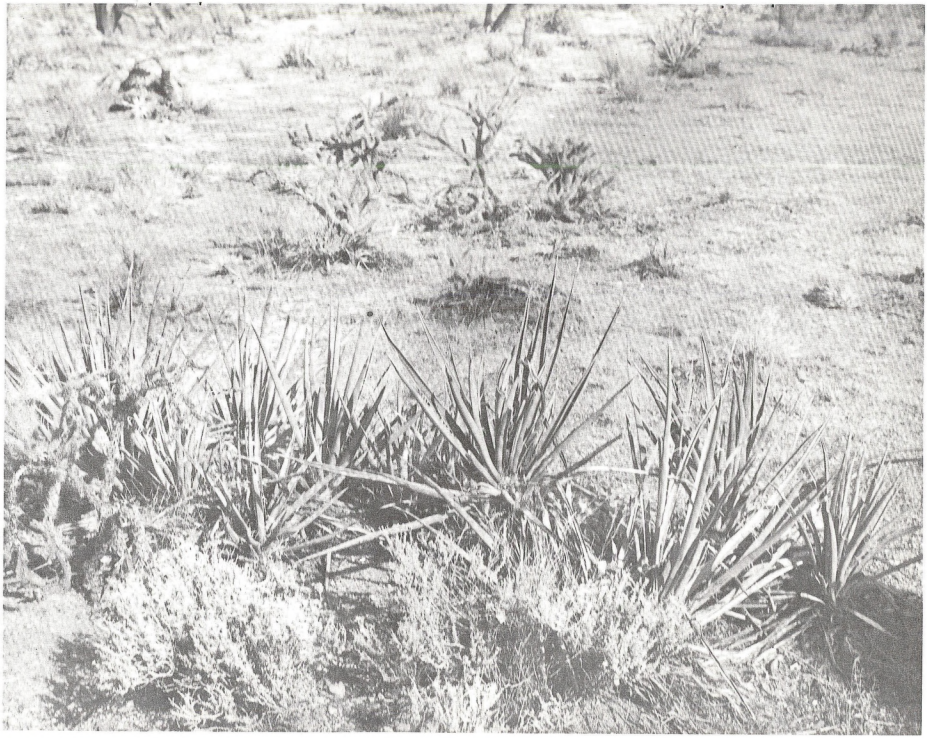
Not a single bullet hole in the trash cans, cedar plank table tops still whole, shelters and wooden posts intact. It's new.



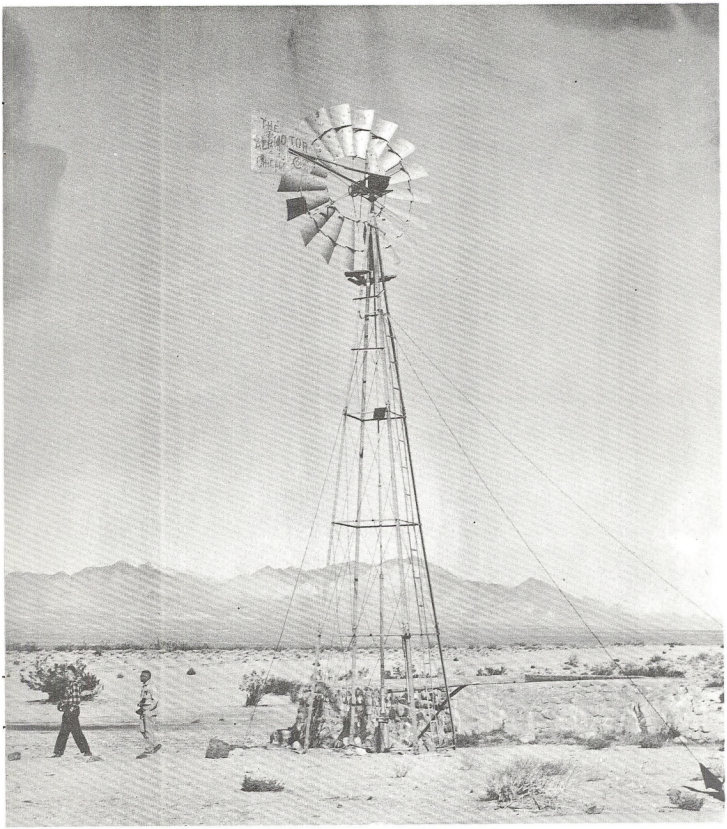
CALIFORNIA

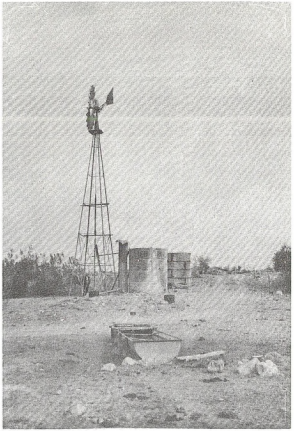




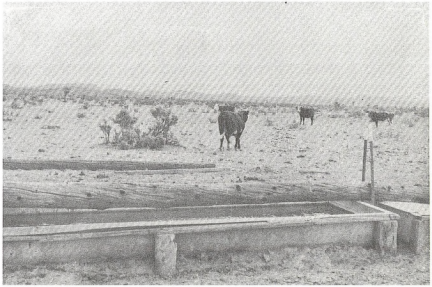


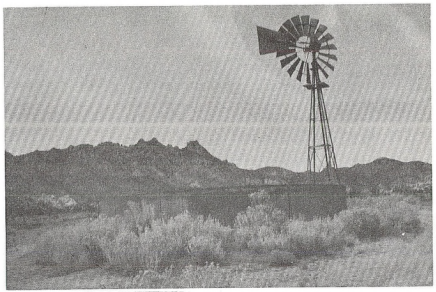
Joshua Trees, Cholla and Prickly Pear cacti, Mormon tea, Saltbushes, Rabbit brush, Desert "holly", Desert needle-grass, Blackbrush, Dalea, and hundreds of related desert grasses and shrubs characterize the BLM lands in the Mojave Desert.


THE
AERMOTOR
CHICAGO

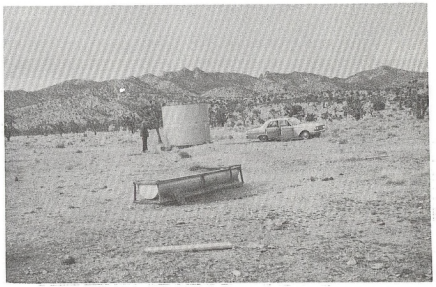


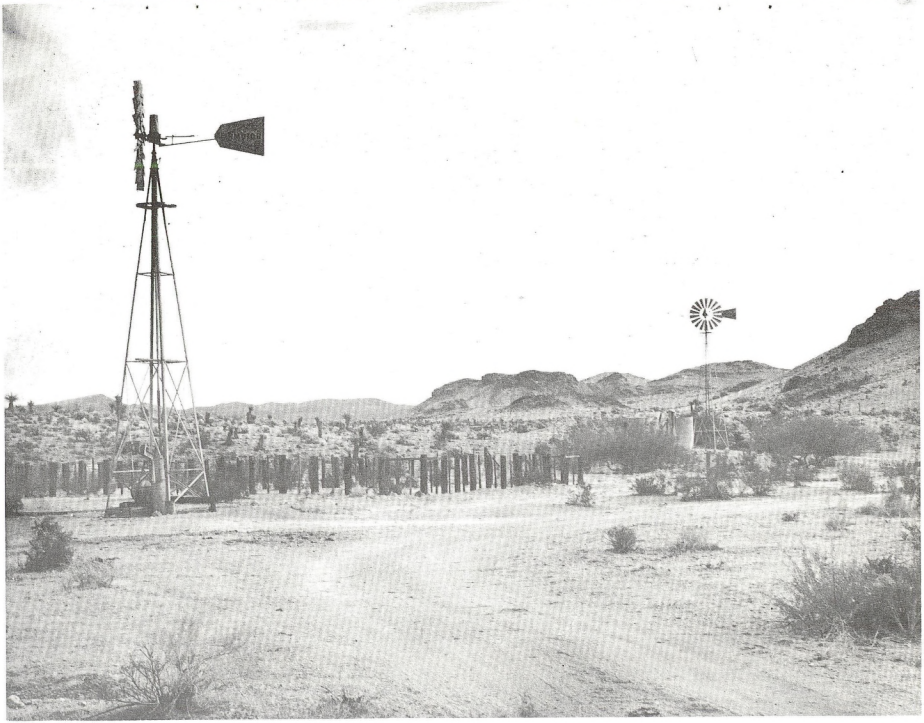
Windmills, tanks, watering troughs occasionally punctuate the vast sea of Joshua trees on the Mojave Desert. Range bred cattle manage to find enough to eat, but water is all important. Windmills provide life for most of the large animals of the desert.

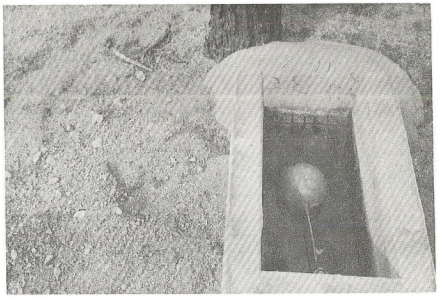




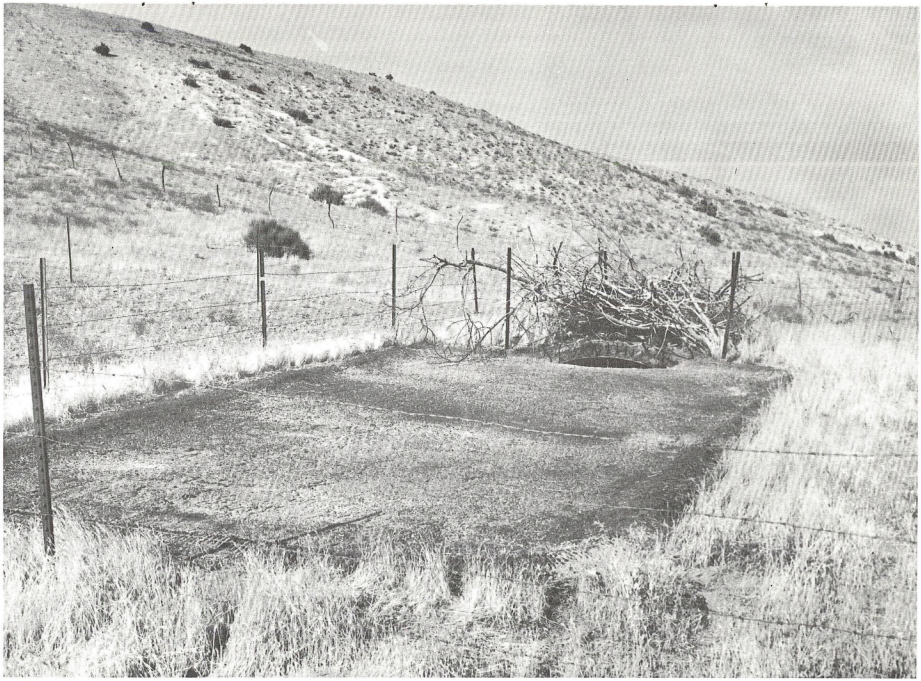
Windmills,tanks,troughs.
Windmills,tanks,troughs.
Cattle,sheep,horses,hunters.
Rock hounds,desert campers.
Yet,senseless vandal
imbeciles delight in shooting mill blades and tails, water tanks and even mill gear boxes full of holes.
A gear box costs $400, and a month's loss of precious water to the desert community.



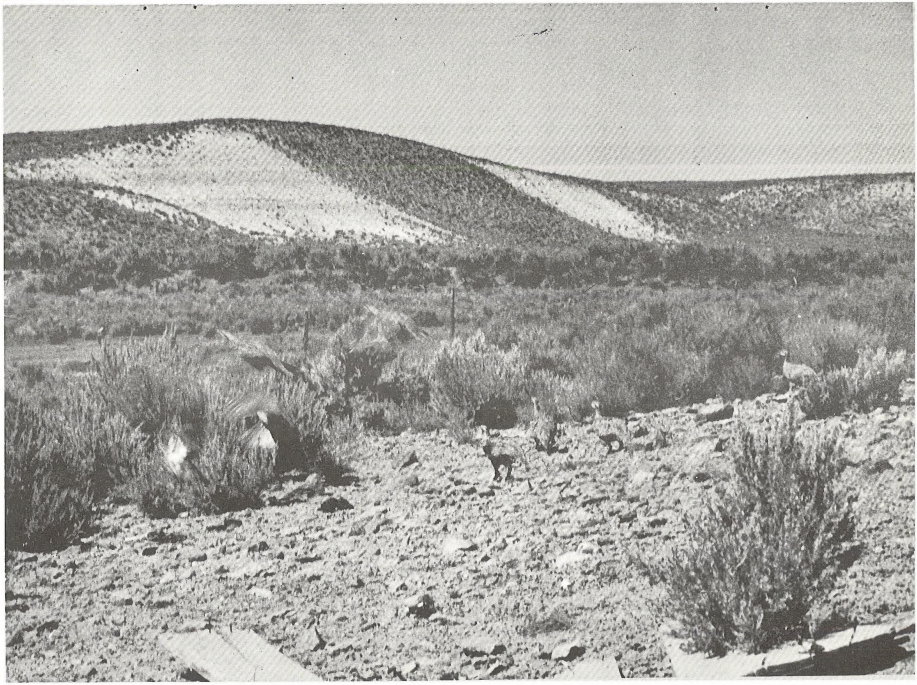




Sportsmen assist in desert water distribution."Guzzlers" for quail and chukkars are installed and attached to plastic pipelines spreading from windmills and tanks out across the desert.Float valve control water flow.Riverside District of BLM has installed around 400 miles of pipelines One is 27 miles long.Guzzler sites are fenced to exclude livestock but birds and even swarms of bees, suck them dry.

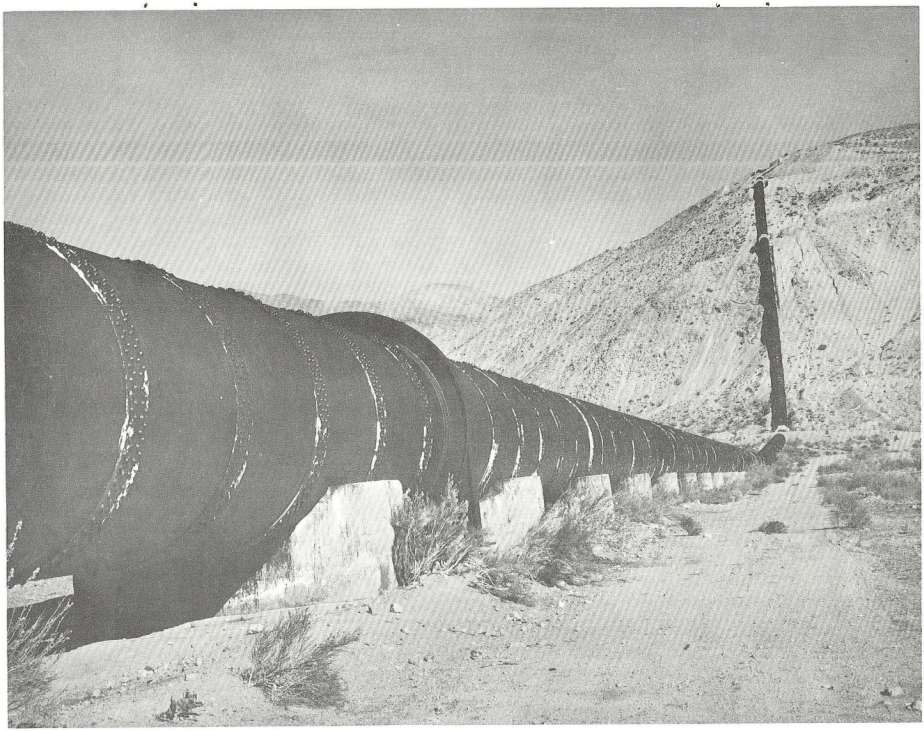


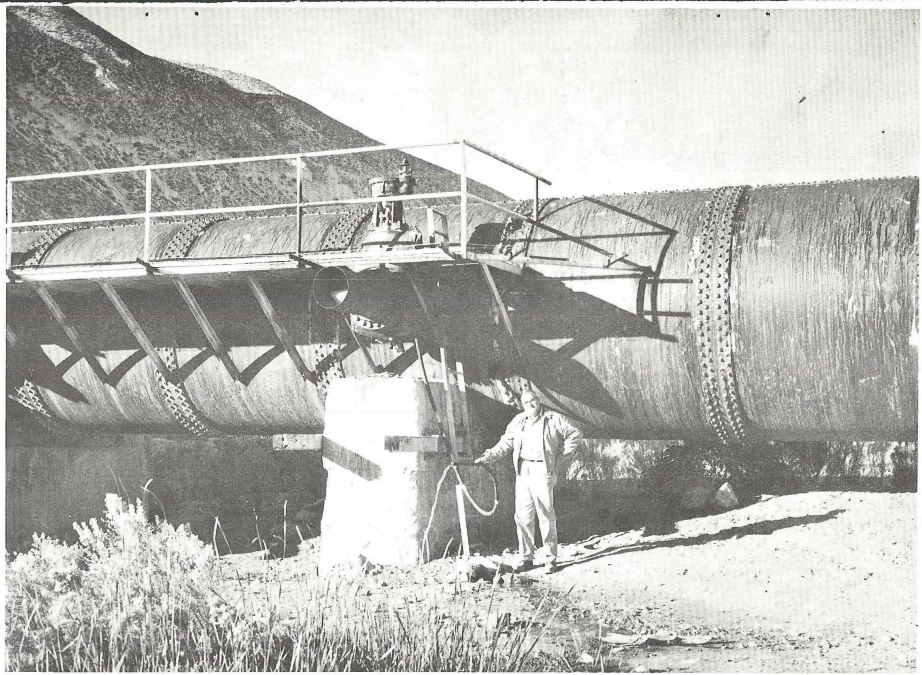
Asphalt aprons collect moisture and drain it into underground tanks, where birds walk down gradual inclines to reach the water. All are fenced for protection from livestock.



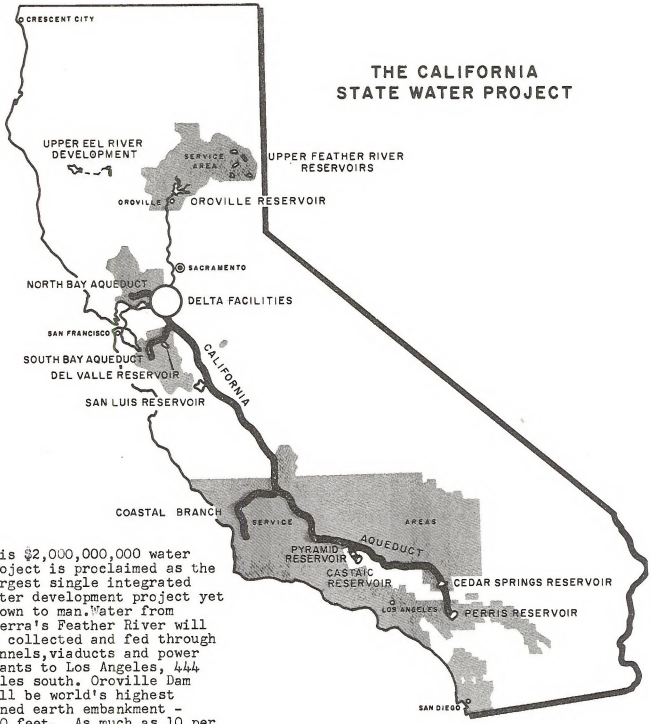
Sage ground in higher elevations frequent watering devices.

Mule deer in pine-clad foothills of Sierras.



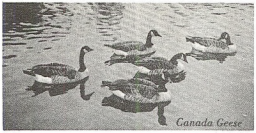


Los Angeles water viaduct stretches 300 miles south from Owens Valley across hills and canyons. Water taps are provided at frequent intervals for livestock, wildlife and travelers. Tough steel walls resist the numerous attempts of playful vandals to shoot holes through them.



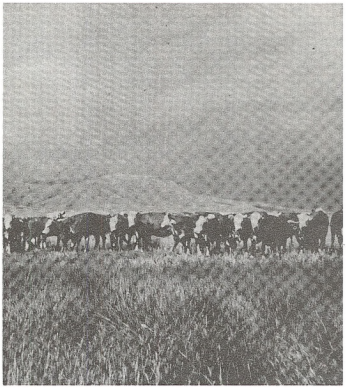
This $2,000,000,000 water project is proclaimed as the largest single integrated water development project yet known to man. Water from Sierra's Feather River will be collected and fed through tunnels, viaducts and power plants to Los Angeles, 444 miles south. Oroville Dam will be world's highest zoned earth embankment - 770 feet. As much as 10 per cent or $200,000,000 will be spent for fish, wildlife and recreation. The project will serve more than half of California, and two-thirds of its population. BLM lands are included.

BLM is getting into the recreation business to accommodate visitors to public lands. This site located on attractive live stream below Sierras, west side Owens Valley.

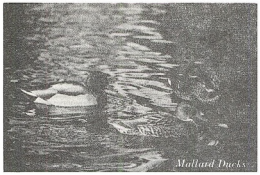


Canada Geese

Rainbow Trout



Trumpeter Swans



Mallard Ducks

Buffalo

Bobcat

Elk

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